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9th

Report to Congress

Health Personnel in the United States

Office of Minority Health
Resource Center
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Introduction

Legislation enacted in the 1970s requires the periodic submission of reports by the Secretary of the Department of Health and Human Services (DHHS) to the Congress on the status of health personnel supply, distribution, and requirements needed to provide adequate health care for the Nation. The current legislative basis for these reports is Section 792(d) of the Public Health Service Act as renumbered by P.L. 102-408, the Health Professions Education Extension Amendments of 1992. Section 792(d) was formerly Section 708(d) of the Public Health Service Act, as amended by P.L. 94-484 and further amended by P.L. 95-623, P.L. 100-607 and P.L. 100-690. In addition, separate legislation mandates reports to Congress on nursing supply, distribution, and requirements (Section 951 of P.L. 94-63 as amended by P.L. 95-623), and on public health personnel (Section 794(c) of the Public Health Service Act as amended by P.L. 94-484 and P.L. 95-623 and renumbered Section 793(c) of the Act by P.L. 102-408). This ninth report, required by the above noted legislation, presents information on issues affecting health personnel, and data on the health professions of medicine, dentistry, nursing, physician assistants, allied health, public health, pharmacy, optometry, podiatric medicine, chiropractic, clinical psychology, clinical social work, and veterinary medicine.

This current Report represents an attempt to more accurately depict the status of health care personnel in the United States. Much of the data on health care personnel in the United States that appeared in previous reports can now be found in a sister publication entitled *Factbook: Health Personnel, United States*. This report draws on data from the *Factbook* and other information to identify and discuss some of the universally important health care issues that are expected to affect the delivery of health care and the demand for health care personnel.

The health care system of our Nation is being fundamentally altered as society struggles to reduce costs while maintaining quality and in some areas expanding care. Undoubtedly, any change in how health care is delivered to the residents of this country will also have an effect on the personnel who deliver this care. This report presents primary issues affecting the health professions. The changing health care system, the major issue facing health personnel, is discussed along with other important and emerging issues such as the declining interest in primary care careers, barriers to practice for nurse practitioners, certified nurse midwives, and physician assistants, minority representation and minority health concerns, rural health personnel, nurse workforce issues, and the varying health care needs of persons with AIDS. Financing and reimbursement issues have and continue to be examined and analyzed by the Health Care Financing Administration, Prospective Payment Assessment Commission and the Physician Payment Review Commission along with others. Therefore, despite the importance of these topics to the health workforce, they are not covered in this report.

This ninth report also discusses occupation-specific issues that are affecting or could affect an occupation's contribution to the delivery of health care to the population. The report provides information on physicians, physician assistants, dentists, nurses, allied health occupations, optometrists, pharmacists, podiatrists, chiropractors, clinical psychologists, clinical social workers, public health, and veterinary medicine.

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Executive Summary

Health Personnel in the United States: Ninth Report to Congress, 1993, is submitted by the Secretary of the Department of Health and Human Services (DHHS) in response to directives of several legislative authorities. This report provides an overview of primary issues affecting the health professions, in particular the evolving health care financing and delivery system. Other important and emerging issues presented include the declining interest in primary care careers; restrictive State practice laws or acts that currently prevent nurse practitioners, certified nurse midwives, and physician assistants from using their full range of skills and capabilities; the underrepresentation of minorities in health professions and its impact on minority health; causes of shortages of health personnel in rural areas and associated problems of affordability and access to health care; the need for an appropriately trained nursing workforce; and the varying health care needs of persons with HIV/AIDS. Also discussed by profession, are issues which affect the supply, distribution, and adequacy of each discipline's ability to provide health care. Information and data are presented on physicians, physician assistants, dentists, nurses, allied health occupations, public health personnel, pharmacists, optometrists, podiatrists, chiropractors, clinical psychologists, clinical social workers, and veterinarians.

This report's format is different than that of earlier editions. The report represents an attempt to depict the status of health care personnel in the United States by identifying the issues affecting them. Much of the data on health care personnel that appeared in previous reports can be found in a companion publication entitled *Factbook: Health Personnel, United States*. This report draws on data from the *Factbook* and other sources to identify and discuss important health care issues that will affect the delivery of health care and the demand for health care personnel.

Major Issues

State-level Health Care Reform Initiatives

The ongoing changes in the financing and delivery of health care, especially at the State level, has been the product of efforts to provide more comprehensive coverage and reduce the rate that costs are growing. Undoubtedly, any change that alters the delivery of health care also will affect the personnel needed to deliver this care.

Several elements of the changing health care system will have a direct impact on requirements for health personnel and require changes in the mix and type of training they receive. Among these issues are the growth of managed care systems which rely heavily on gatekeepers to ensure appropriate care, and increased emphasis on preventive and primary care services in order to control the long-term costs resulting from inadequate access to care.

Primary Care Concerns

Most agree that access to primary care is beneficial to the overall health of the population and helps to control costs. For this reason, expanding primary and preventive services has been a major objective of those seeking to improve the existing health care system. Primary health care includes a comprehensive range of public health, preventive, diagnostic, therapeutic, and rehabilitative services, the goals of which are to prevent premature death, disease and disability; preserve functional capacity; and enhance overall quality of life. A wide variety of health care professionals either provide primary medical care or contribute to its provision. These include generalist physicians; some physician assistants and nurses, most notably nurse practitioners and certified nurse midwives; dentists; podiatrists; and to a lesser degree pharmacists and a few allied health professionals.

The domination of our system by specialized health care providers and the dearth of adequately trained primary care personnel have inhibited access to care and helped escalate health care costs. Any movement toward a more managed care approach to providing health care will exacerbate the imbalance between the need for generalists and the demand for these health care professionals as demand for primary care personnel increases. To meet future workforce needs, teaching hospitals, ambulatory facilities, health professions schools, public agencies, and other private entities must assure that an appropriate number and mix of health professionals are trained in an environment conducive to preparing professionals to deliver primary care that is cost-effective, person-oriented, interdisciplinary, and community-based.

Barriers to Practice for Nurse Practitioners, Certified Nurse-Midwives and Physician Assistants

Concern over the lack of primary care practitioners, coupled with ongoing efforts to increase access to care for the uninsured and improve preventive services for all, has brought focus on the use of nurse practitioners (NPs), certified nurse-midwives (CNMs), and physician assistants (PAs) as a means of providing primary care. Currently, the extent to which these health care professionals can provide primary care is governed by a variety of restrictive State regulations and reimbursement policies. The barriers to practice affecting each profession are similar in many ways but with some differences that affect their practice environment. The net result, however, is that the optimal use of these practitioners is being compromised. States regulate their respective scopes of practice and in many jurisdictions, despite adequate educational preparation, NPs, CNMs and PAs are unable to perform the services for which they were trained. The full utilization of the skills of these practitioners would have a major positive effect on achieving the goals of improving health care delivery.

Status of Minority and Women Health Care Personnel: Availability to Provide Care to Special Populations.

While women have historically dominated the majority of nursing and allied health professions, the 1980s and 1990s also saw them contribute significantly to the growth in traditionally male-dominated occupations such as medicine, dentistry, and optometry. The growth rate of minority women in health care occupations has also been substantial, although such women continue to represent a very small percentage of health professions graduates as a whole. Black women, for instance, were solely responsible for increased black representation in medicine and dentistry. The loss of black male professionals in some fields and their failure to match the gains of black women in others, represents a critical setback that needs to be addressed. Similarly, while the growth of Hispanic women in allopathic and osteopathic medicine, dentistry, pharmacy, optometry, podiatry, and veterinary medicine has exceeded that of all women, their still very small numbers limit their availability to treat the populations that need them most. This is of special concern in that Hispanics are the fastest growing minority population in the United States.

Many of the national health goals for the year 2000 that target women and children in low-income and minority groups depend on increasing the supply of women and other minority health care providers to bridge the language and cultural gap that often inhibits access to care. While women will continue to increase their representation in many of the health care professions, an inadequate supply will serve as a constraint on the Nation's efforts to treat the populations that need them most. The declining numbers of black male graduates in some professions and the continued underrepresentation of other minorities indicate renewed efforts are needed to increase the recruitment and retention of these populations.

Health Care in Rural America

Affordable and accessible quality health care delivery has always been difficult to find in rural areas. If the ongoing changes in health care are to improve access to care for rural populations, they must address the issues specific to rural populations such as inadequate numbers of providers; failing rural hospitals; high incidence of agricultural and occupational health problems; lack of mental health and rehabilitative services; and deteriorating emergency medical systems. To adequately address the needs of rural populations, policymakers will need to identify and examine differences in urban and rural practice and to make appropriate accommodations to correct these differences.

Preparing a Nurse Workforce Appropriate for Current and Future Health Care Delivery

The key to preparing an adequately trained nurse workforce capable of handling the added responsibilities that may result from an evolving health care delivery system is nursing education. Nursing and nursing education are being challenged to provide for the increases in demand for baccalaureate-prepared professional nurses and master's-prepared advanced practice nurses in nonhospital settings.

Entry into nursing primarily continues along three pathways: hospital diploma programs, 2-year associate degree programs, and 4-year baccalaureate programs. The percent of graduates earning baccalaureate degrees has remained about the same, while the percent of associate degrees has risen to represent about two-thirds of all new graduates. The irony of this trend is that future demand for nurses will be oriented toward the baccalaureate-prepared nurse. Community nursing and the increasing trend toward ambulatory care will require broad based education most commonly found in baccalaureate programs. Furthermore, the bachelor's degree is required for entrance into advanced nursing training.

At the master's level, highly skilled advanced practice nurses are being promoted as primary health care providers useful in providing care in settings such as ambulatory primary care clinics. The task is to increase the number of advanced practice nurses in all specialties to aid in expanding access to care in a cost-effective manner.

Health Care Services for Persons with HIV/AIDS

The human immunodeficiency virus (HIV) epidemic continues to have an impact on every segment of our health care system. The Centers for Disease Control and Prevention (CDC) estimates that over one million persons are infected with HIV in the United States. Furthermore, about 40,000 persons are likely to become infected annually in the United States in the 1990s. Beyond treating persons with AIDS, additional resources have been dedicated to health education, testing, monitoring, and HIV prophylaxis. Still, more services are needed than are being provided. A recent study estimated that as few as one-third of those infected receive health services specific to their infections on a regular basis. Even among those symptomatic of HIV, only half received non-home health services in 1991.

At the same time, tuberculosis (TB) has again become a national public health concern. CDC estimates there are 100,000 persons co-infected with HIV and TB in the United States. Furthermore, new multi-drug resistant strains of TB have increased the need for preventive and therapeutic services for HIV and vulnerable populations. Efforts to combat the spread of either infection must include special preparation of health personnel to provide health services—especially in hospitals, substance abuse programs, prisons, and programs for the homeless.

Discussion of Disciplines

Physicians

In 1992, there were approximately 597,400 active allopathic physicians in the United States, 74 percent of whom provided patient care. In addition, there were approximately 32,500 osteopathic physicians in 1993. Despite an apparently adequate if not excessive supply of physicians, physician supply is expected to continue increasing at a rate faster than the growth in the population. Initially, expansion of the physician supply was viewed positively as a way of increasing minority representation and improving access to underserved populations. The steady expansion, however, has not had these desired effects. Most physicians continue to locate in highly populated areas where the consequence may be over-doctoring leading to unnecessary increases in health care expenditures.

Despite rapid overall growth, only 33 percent of allopathic physicians providing patient care specialized in the important primary care fields of general and family medicine, general internal medicine, and general pediatrics. As of 1992, only 15 percent of medical school graduates were interested in pursuing primary care training. In contrast, 46 percent of active osteopathic physicians were primary care physicians. Because primary care physicians are more prevention minded and more likely to work in underserved areas, it is expected that demand for them will increase in conjunction with the expected expansion of managed care systems, which rely heavily on primary care physicians.

Concerns about an oversupply of physicians coupled with an inadequate supply of primary care specialists have caused the Council on Graduate Medical Education to recommend, in part, that the supply of physicians be limited through a capping of residency positions to 110 percent of total graduates from U.S. medical schools, and that the Nation should move toward a system where 50 percent of the physician population practices in a primary care specialty.

Physician Assistants

Physician assistants (PAs) are recognized by law in 47 States and the District of Columbia as skilled health care providers authorized to diagnose illness, order and interpret lab tests, establish treatment plans, conduct physical exams, and provide general health care services under the direct supervision of a physician.

As of June 1993, there were about 23,300 practicing PAs. Because PAs are more likely than physicians to specialize in a primary care field, and are more likely to work in underserved areas, PAs are being promoted as one of the ways of increasing the number of primary care providers in underserved areas. The expectation that PAs will play an expanded role in the evolving health care system has resulted in several proposals to increase their numbers. One proposal calls for an attempt to double the annual number of PA graduates to nearly 3,500 by 2000 and to double the supply by 2005.

Dentists

The American Dental Association estimated that there were 155,000 active dentists in 1992. Indications are that the supply is adequate to meet current economic demand. Despite improvements in the Nation's overall oral health, a significant share of the population continues to suffer from untreated problems because oral health tends to be financially inaccessible and unavailable in some rural and low-income areas. Greater than 40 percent of the population fails to receive any dental care in any 12-month period, an unfortunate fact since most dental problems are easily prevented, but are not self-limiting.

Nurses

Nursing constitutes the largest segment of those employed in health care with 1.8 million employed RNs in 1992; 550,000 employed LPN/VNs in 1991; and about 1 to 1.1 million employed as assistive nursing personnel. The demand for nurses is projected to increase considerably due in part to expansion of care in nontraditional settings, improved technologies, the aging of the population, and the emphasis on health promotion and disease prevention. Estimates of future demand for nurses will need to account for nursing's changing role in the evolving health care system, and the role nurse practitioners and nurse midwives can play in providing cost-effective care.

The two previous reports identified an insufficient supply of RNs to fill existing demand. Recent indicators suggest that, for the present, the shortage has eased. Factors possibly contributing to the easing of the shortage include an increase in the number of basic nursing graduates after decreases during the mid-eighties, and a greater tendency for licensed RNs to be employed.

Future needs must be viewed from a variety of perspectives. While current enrollments are increasing, it must be remembered that there are many factors affecting choices individuals might make about becoming an RN. In addition, demographics of the workforce must be taken into consideration; new graduates are coming from older segments of the population and the average age of the registered nurse population continues to rise. So, while increasing enrollments and greater participation of licensed RNs in the labor force paints a more optimistic picture than what was reported in the *Eighth Report to Congress*, the aging of the population and increasing demand for RNs remain a concern.

Allied Health

Employment in allied health occupations grew 42 percent between 1983 and 1992, from 1.5 to 2.1 million, about two-and-one-half times the rate for all occupations as a whole over the same time period. More significant is that employment in these occupations is projected to grow 50 percent between 1990 and 2005, a rate significantly higher than the 29 percent growth projected for physicians and higher than the 44 percent growth projected for the nursing occupations. Indications of shortages are already being reported. AHA data show that the professions with the five highest full-time hospital vacancy rates in 1991 were physical therapists, occupational therapists, radiation therapy technologists, cytotechnologists, and speech pathologists.

Rapid projected growth for the allied health professions is based largely on the expectation that while new technologies and new equipment will protect and preserve life, they will also result in greater demand for long-term rehabilitative services. New technologies will also increase the need for personnel to operate diagnostic equipment and to perform diagnostic laboratory tests. Finally, population growth, especially in the rapidly growing elderly segment, will increase the demand for chronic care services such as those provided by occupational and physical therapists.

Public Health

Although often viewed as a provider of last resort, public health's primary goal is not the provision of individual care but of promoting health and prevention of community-wide diseases. These latter goals should be accomplished through public health's three core functions of 1) assessing community health and its needs, 2) promoting public health's skills and knowledge as a tool to developing sound public health policy, and 3) assuring that mandated services are provided.

Fulfillment of these goals requires the work of a variety of public health professionals, including physicians, nurses, dentists, epidemiologists, environmental health personnel, industrial hygienists, health service administrators, nutritionists, social workers, and educators.

The promise of increased reliance on managed care in the evolving health care delivery system could increase the demand for public health professionals. Increased reliance on managed care for instance, could result in HMOs hiring epidemiologists to evaluate disease prevalence and devise prevention strategies.

On the other hand, the changing health care financing and delivery system could also create new problems for public health departments. Because public health is generally perceived as a provider of health care, interest in supporting public health agencies may decline if health insurance coverage increases and health maintenance organizations become more accountable for the health of the population. At risk are public health's other important functions of identifying community-wide disease prevalence, development of health promotion activities, and protection of public water and food supplies.

This section also discusses the ongoing issue of how to provide an adequate and appropriately trained supply of public health professionals to respond to evolving public health needs.

Pharmacists

There were about 172,000 active pharmacists in 1992. After several years of declining enrollments and other factors consistent with a shortage, the numbers of applicants, enrollments, and programs are again on the increase. The profession is currently facing several issues: One is a proposal to increase the basic entry-level educational requirement to a 6-year program; another is pharmacy's need to become more consumer rather than product oriented, and the effect this trend will have on pharmacists. Medicaid regulations requiring patient counseling and drug use review have raised concerns about appropriate compensation for services that require a pharmacist's time but may not result in the dispensing of a product.

Optometrists

According to the American Optometric Association, there were approximately 27,600 full-time equivalent optometrists in 1993. Currently, the supply of optometrists appears adequate and is projected to grow at a rate faster than that of the population.

Optometry continues to increase its market as States expand the practice acts governing the profession. From performing simple eye exams for purposes of prescribing lenses in the early 1970s, optometric practice has expanded to include the use of diagnostic drugs in all States, and therapeutic drugs to treat certain eye diseases in many States. In addition, Medicare now defines optometrists as "physicians," allowing them to apply for reimbursement for services provided to those over 65. A number of studies have shown that optometrists tend to charge less than ophthalmologists. If these studies are accurate, then changes in Medicare and State scope-of-practice laws could reduce costs and improve access by transferring demand from more expensive ophthalmologists to less expensive and more plentiful optometrists.

Podiatrists

The American Podiatric Medical Association estimated that there were about 13,000 practicing podiatrists in 1993. Although podiatrists are defined as "physicians" by all third-party payers for purposes of reimbursement, there is concern about the possible effects of the evolving health care delivery system on this occupation which consists primarily of private practitioners (roughly 70 percent). Should the changing health care system emphasize a managed care approach, podiatrists will need to develop affiliations with managed care organizations.

Another issue is the uneven distribution of podiatrists throughout the United States. Nearly 50 percent of all podiatrists are located in the seven States having podiatry training programs. Because podiatrists would appear to be less expensive than either primary care physicians or orthopedists who can provide the same services, a redistribution could be advantageous. There are questions, however, about how this can be accomplished.

Chiropractors

As of 1990, there were between 45,000 and 50,000 licensed chiropractors in the United States. As with podiatrists, chiropractors have a high rate of self-employment and should a managed care system become the norm, chiropractors would need to form affiliations with HMOs and PPOs. Because these systems have displayed a hesitancy in employing chiropractors, those in the profession run the risk of being excluded from a large share of the market.

Chiropractic also believes Medicare reimbursement is inadequate. Although defined as a "physician" for purposes of reimbursement, Medicare pays chiropractors only for manipulation of the spine. Services such as X-rays or other clinical services are not covered by Medicare and must be paid out of pocket or with secondary insurance. Chiropractors view this as an impediment to individuals who would prefer to receive care from a chiropractor, but choose an allopathic or osteopathic physician because their services are more likely to be covered.

Clinical Psychologists and Clinical Social Workers

Reliable supply estimates of clinical psychologists and clinical social workers do not exist, and the task of estimating demand for them is difficult because a number of other occupations are capable of substituting for them.

As with other health care professions, the evolving health care system is the major issue facing these occupations.

Changes in the financing and delivery of health care could significantly change the utilization patterns of mental health care providers, and result in more intensive short-term services that could ultimately result in the need to alter training programs.

Other concerns facing these occupations include questions about the cost-effectiveness of extending reimbursement to specialists not currently covered; ways of being more consumer oriented and adaptable to meet both the physical and mental needs of clients; and the need to foster greater collaboration among the growing body of mental health professionals.

These and additional issues are discussed in the publication *Mental Health, United States, 1992* which is produced jointly by the National Institute of Mental Health and the Substance Abuse and Mental Health Services Administration.

Veterinarians

There were about 47,000 veterinarians employed in 1990. Rapid growth in pet ownership is expected to drive demand for veterinarians up to about 62,000 by 2005.

Issues facing veterinarians include a growing role in helping to determine what constitutes the ethical treatment of animals in medical research and product testing, and how veterinary medicine can help address the changing nature of high technology farming with its associated problems of disease and use of chemicals and hormones.

State-Level Health Care Reform Initiatives, Potential Implications for the Health Workforce

Herbert G. Traxler^{1*}

Background and Introduction

Medical care in the United States extracts enormous individual and societal costs, and these costs continue to escalate. As the Gross Domestic Product (GDP) proportion of health care expenditures has risen in recent decades, relative resources available for education, social programs, and other public needs have been drained. The health care industry in 1993 accounted for nearly \$1 trillion, or one seventh, of the nation's public and private economic output (GDP). At the same time, 37 million Americans have no health care coverage; and although most of these are young, working individuals who are without coverage for only part of the year, they often get care later than they should and in high cost settings such as the nation's overburdened emergency rooms.¹ Millions more have coverage which is subject to cancellation or subject to substantial premium increases at a time when their insurance needs are highest. Furthermore, many individuals living in the inner cities and rural areas lack access to providers due to cultural, geographic, and financial barriers to care. Partly as a result of this inadequate access to health care, the United States ranks poorly on many measures of health status. In a 1990 comparison with 23 other developed countries, the United States ranked in the bottom half in universal health status indicators such as infant mortality and male or female life expectancy, despite the fact that we spend more than twice as much per capita on health care than the 24-nation average.²

While offering remarkably sophisticated treatment of diseases, and an array of medical services and procedures to the wealthy and well-insured (with sometimes questionable necessity and outcomes), the nation's health care delivery system is unable to provide simple, basic care to large segments of the population.

The continued rapid escalation of already enormous health care costs, coupled with disappointing health outcomes and worsening access for some population groups, have led many States, hospitals, insurers, and providers to work together in an effort to reduce costs while maintaining quality care, and in some cases to expand coverage. The governors and legislatures of many States have been preparing legislative proposals to change the way health care is organized, financed, and delivered, with the goal of containing escalating health care costs while improving access and quality of health care.

Health Care System Reforms

Despite the lack of a consensus at the national level, many States have forged their own reform programs. While the final shape of the changing health care system has yet to be determined, the States' intended purpose of expanding coverage will certainly alter the demand for health care providers. Concern over how State-level health care changes will affect demand for labor has increased. It is now conceded that changes will ultimately affect not only the requirements but the supply and training of those who provide care: physicians and physician assistants, nurse practitioners, certified nurse-midwives, registered and licensed practical nurses, allied health professionals, public health professionals and mental health providers.

Physician payment reform is essential to address inequities in payments across clinical specialties, which currently value procedural activities over cognitive services. Medicare's introduction of the Resource Based Relative Value Scale (RBRVS) increases the payment for assessment and management services relative to procedural services. It is an initial step to stimulate shifts in physician activities toward less invasive and more cognitive services, albeit it applies only to the elderly at this time. Additional changes required in the health workforce are discernible. Many of these are contained in

^{1*} The author gratefully acknowledges the substantive and editorial contributions by Dr. Carol Bazell, Ms. Sandy Gamliel, and Ms. Stephanie Sansom.

the findings and recommendations of the Council on Graduate Medical Education's (COGME) recent third report, entitled *Improving Access to Health Care Through Physician Workforce Reform: Directions for the 21st Century*, one of the key documents in this area, focusing on physicians.³

Requirements

Improving financial access to health care for underserved populations in States will have an enormous impact on the health professions. Expanded access for individuals will increase the demand for primary care and preventive services, and in turn increase the requirements for a variety of health care professionals. Primary care physicians, nurse practitioners, and physician assistants will be needed to provide preventive services, diagnosis and treatment for acute and chronic diseases, and serve a "gatekeeping" or case management function in an expanded managed care environment. These primary care providers will be essential for health system objectives of controlling costs, and integrating and coordinating care and promoting access to health care delivery. Growth of managed care systems such as HMOs will further increase the demand for primary care providers because they rely on these health care professionals to act as "gatekeepers" and to coordinate a patient's treatment, often shifting responsibility away from specialists. This is likely to increase the services of some and decrease those of other health care professionals.

In addition, some types of managed care systems, such as staff model HMOs, frequently rely on nurse practitioners and physician assistant to provide primary care services. The growth of such systems could lead to an increased demand for these practitioners who are currently in short supply.

Since the preponderance of specialist physicians is currently a factor in the escalating costs of medical care, and the number of medical students choosing generalist fields continues to decline, significant changes in the specialty patterns of practitioners will be required to meet health needs. This has been recognized by the Association of American Medical Colleges' (AAMC) Generalist Physician Task Force, which recommended "that a majority of graduating medical students be committed to generalist careers (family medicine, general internal medicine, or general pediatrics) and that appropriate efforts be made by all schools so that this goal can be reached within the shortest possible time."⁴

Other health personnel will be vital to provide increased care in ambulatory settings and within organized care systems of hospitals, health maintenance organizations, and long-term care facilities. Increased use of professionals experienced in community-based interventions and community outreach will be critical to ensure that all patients have true access to needed health care. Registered nurses and licensed practical nurses will continue to serve, reaching a segment of the population whose health care needs have been all but ignored in the past. Additional pharmacists would fill more prescriptive medications for previously untreated acute illnesses and for newly diagnosed chronic conditions. Pharmacists may also require increased time to explain the use, drug interactions and side effects of medications. Depending on the scope of State-level changes, increased access might also mean greater demand for dental visits since much of the uninsured population currently receives no dental care during any given year.

Allied health personnel will be called on to perform additional laboratory and other diagnostic tests and procedures, exacerbating the existing, chronic shortage that exists for some of the allied health occupations. The 1991 American Hospital Association's Survey of Human Resources found the highest full-time hospital vacancy rates were among physical therapists, occupational therapists, and radiation therapy technologists, with vacancy rates of 17, 14, and 13 percent, respectively.⁵

Greater access would bring care to more individuals with a gamut of conditions including heart disease, diabetes, cancer, and HIV/AIDS; diseases which could affect the requirements for health care providers. In the case of HIV/AIDS for example, a recent study conducted for the Bureau of Health Professions suggests that two-thirds of those infected with HIV do not receive regular treatment for the disease—including one in nine who are in the final, most devastating stage.

Supply and Training

The Bureau of Health Professions has proactively emphasized the need for worksite and educational reform in meeting the needs of a changing health care system. In addition to the goal of training more generalist physicians, recommendations include shaping the workforce to reflect the nation's ethnic diversity; maintaining the current physician-to-population ratio rather than allowing it to increase; establishing supply needs for nurse practitioners, primary care physician assistants, and certified nurse-midwives; and, distributing physicians in a geographically equitable way.⁶

Changes in the health care system will not only alter the requirements for health personnel, but will also encourage health care professionals to care for patients in a variety of ambulatory or community settings. More emphasis is likely to be placed on ambulatory care and on longitudinal and preventive care services, and on outreach programs to draw in populations unaccustomed to obtaining health care services in non-emergency situations. The duties and scope of practice for some providers could change. HMOs, for example, already have concerns about the adequacy of graduate medical education that now occurs primarily in hospitals, to prepare physicians for their "gatekeeping" role and for practice in ambulatory and community settings. Similar concerns about appropriate training apply to specialists for whom hospital-based and outpatient-based practice and patient management styles vary greatly.

The Pew Health Professions Commission in its influential first report, *Healthy America: Practitioners for 2005*, found that health professions education and training overall is inadequate. Inadequacies exist regarding the type of care health professionals give, the way they give it, what they value and how they interact with each other, according to the Commission.⁷ In its second report, *Health Professions Education for the Future: Schools in Service to the Nation*, the Pew Commission found education and training to be "even more out of sync with the health care system that is emerging." It has recommended a greater emphasis on values and skills such as caring for the community's health, ensuring cost-effective and appropriate care, and practicing prevention.⁸

In order for State-level health care initiatives to succeed, they should address issues pertaining to the education of the workforce, in addition to reorganization and refinancing. An inappropriately trained workforce will hinder even well planned and financed health care reform efforts. Access to care will not be improved if the primary care providers are not adequately equipped to deal with cultural barriers to care or are not willing to locate in rural and inner city areas.

State-level health care strategies and changes in the health care system may influence the future supply of health professionals as well. These changes could affect scope, sites, and patterns of practice, levels of reimbursement for services, personal income, and lifestyles unevenly across the health professions. It is essential that policymakers at the State and Federal level consider the impact that these measures will have not only on current providers but also on incentives for individuals to choose health professions as careers. Changes in expected incomes, work environments, and working conditions will affect the type, quality, and number of individuals who will enter health professions in general and specific occupations in particular over the upcoming decades. Health care initiatives must not only be aimed at altering the current system but also look ahead toward maintaining an appropriate supply, in the context of epidemiologic trends and continuing technological development.

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Primary Care Concerns

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A Definition of Primary Care

Primary health care includes a comprehensive range of public health, preventive, diagnostic, therapeutic, and rehabilitative services, the goals of which are to prevent premature death and disability, preserve functional capacity, and enhance overall quality of life. A wide variety of health professionals deliver primary medical care or contribute to its provision, including public health nurses, preventive medicine/public health physicians, dentists, nurses, optometrists, pharmacists, podiatrists, and allied health professionals. An essential component of primary health care, critical to an effective health care system, is primary medical care. Primary medical care is characterized by the following elements: first contact care for those with general health concerns; comprehensive basic health care not specific to an organ or a single problem; an orientation toward providing continuous care through a single provider or team of providers; and responsibility for coordinating other health services.

Health professionals trained in primary medical care are "generalists." They are trained in, practice, and receive continuing education in the following competencies: health promotion and disease prevention; assessment/evaluation of undifferentiated symptoms and physical signs; management of common acute and chronic medical conditions; and identification and appropriate referral for other needed health care services. Primary medical care providers include generalist physicians (i.e., family physicians, general internists, general pediatricians), certified nurse-midwives, physician assistants, and nurse practitioners.

Economics

Experts argue that the Nation's health care delivery system wastes enormous amounts of money on marginal, duplicative, and unnecessary services.¹ The prevalence of open-ended funding through indemnity insurance and fee-for-service reimbursement of providers and hospitals is a powerful stimulus to provide extra services of all kinds, including many of marginal benefit. A system that does not require or encourage patients to see generalists before going to specialists, and reimburses those specialists at a

preferred rate, uses far more tertiary services and is far more costly.¹ Any attempt to change the educational environment to promote generalism will be thwarted by the absence of changes in how care is delivered and reimbursed. The Resource-Based Relative Value Scale, adopted for reimbursement under Medicare, is an attempt to shift reimbursement in favor of promoting primary care. However, changes in the structure of the reimbursement system must be more pervasive, involving other payers, to effectively stimulate the production of generalists.

Educational Environment

Comprehensive educational changes are essential for redirecting health professions training toward greater generalism, including changes in the financing of undergraduate and graduate health professions education. Other necessary changes include the training and deployment of primary medical care providers in addition to generalist physicians, restructuring academic admissions procedures, revamping the system of accreditation, expanding community-based ambulatory training experiences, focusing on the organization and management of services, enhancing outcomes research, expanding primary care faculty development activities, retraining and reorienting specialists to be primary care providers, and increased access to the underserved.

Financing of Undergraduate and Graduate Health Professions Education

Health professions education receives substantial support from tax dollars. The most visible but least substantial Federal contribution, at \$287 million in fiscal year 1992, is made through programs under Titles VII and VIII of the Public Health Service Act. This includes funding for primary care training, and loan and scholarship programs for financially needy and minority students. The Departments of Defense and Veterans Affairs administer graduate medical education programs costing more than \$750 million together. The National

Institutes of Health (NIH), although not expressly authorized to finance health professions education, indirectly influences the educational environment by supporting specialization through its biomedical research.² The NIH budget exceeded \$10 billion in fiscal year 1993.

The Medicare trust fund pays hospitals in excess of \$5 billion per year for graduate health professions education. About one-third covers the direct reimbursement of medical residents and nursing and a variety of allied health students trained in the hospital environment. These dollars, driven by the number of residents and students and Medicare days-of-care rates for hospitals, support hospitals' acute care, high-tech service needs for labor and undermine the preparation of generalists. These dollars need to be reallocated to support generalist training and primary care training in community-based settings.³

Deployment of Generalists Other than Physicians

Analysis of the current health workforce, as well as projections of demand given present and likely future changes in the health care delivery system, need to take into account the substantial presence and potential future contribution of nurse practitioners, physician assistants, and certified nurse-midwives. These non-physician providers have traditionally practiced primary care, although today there is a tendency for physician assistants, in particular, to work in specialty settings. A number of studies have concluded that non-physician providers with advanced education are seriously underutilized in today's health care system.⁴ The reasons include legal scope of practice restrictions, delegation, unfavorable reimbursement policies, and the small size of existing training programs. The net effect is that fewer services are delivered at higher prices than necessary. One research team estimates that \$6 billion to \$8 billion is lost from the current inefficient use of primary care nurse practitioners.⁴

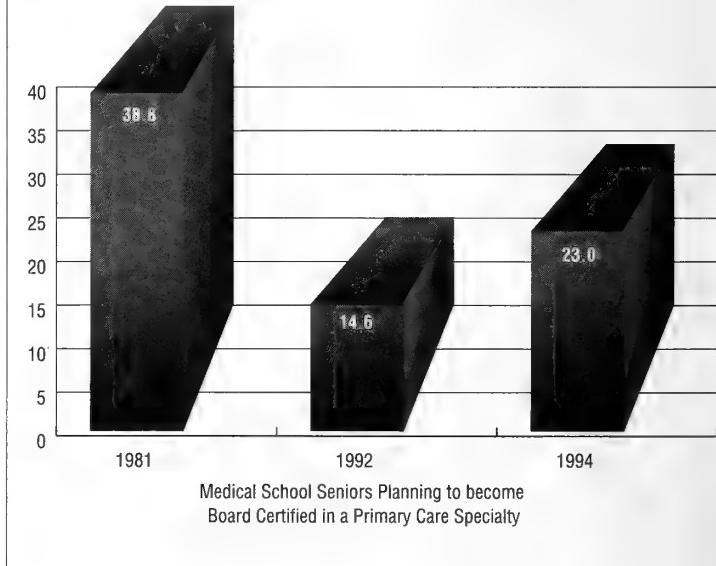
Restructuring Academic Admissions Procedures

Current admissions criteria need to be redirected to select students who are more likely to practice in underserved areas, and to reverse the trend away from interest in primary care careers. The evidence suggests that those from racial/ethnic minorities and rural backgrounds are more likely to select primary care careers and practice in underserved locations.² The composition of admissions committees also needs to reflect the desired generalist/specialist workforce mix.

Revamping the Accreditation Process

The current system of accreditation, certification, and licensure has contributed to the generalist/specialist imbalance. These specialist-dominated, uncoordinated, and often contentious bodies have reinforced the current educational paradigm and have been unresponsive to the kinds of primary care providers needed for the future.^{2/5/6} This system needs to be simplified and coordinated to remove barriers to practice that inhibit access to health care for millions of Americans.

Figure 1
After Declining, Interest in Primary Care Careers Has Grown



Expanding Community-based Ambulatory Training

The dominance of hospital-based tertiary care training has been cited as one factor that has contributed to the erosion in primary care career selection.^{7/8} Training experiences must mirror the settings in which primary care providers are most likely to practice. Community-based ambulatory training experiences teach future practitioners to assess the service needs of the potential patient population. The amount of curriculum time devoted to these settings is a factor that influences career choices. Required experiences in community-based settings are therefore necessary to balance the dominance of more narrow, specialized training.^{2/7/8}

Organization and Management of Services

The new and emerging health care delivery system with emphasis on managed care arrangements necessitates expansion of primary care services. However, without a concurrent restructuring of the system in which primary care services are delivered, the prospects for improving access while controlling costs will be limited.⁹ In essence, the organizational structure in which much of primary care will be delivered, such as in managed care arrangements, creates a level of hierarchy and accountability where the primary care provider will be the usual source of care, manage a variety of patient concerns, and control the referral process to specialists. The education of primary care providers must prepare these future practitioners to work in a variety of organizations and to manage the allocation of resources.

Enhancing Outcomes Research

Research activities in clinical patient care, primary care education, and health services delivery should be an integral part of the research agenda of health professions schools and faculty. Medical effectiveness outcomes research should continue to focus on primary care procedures and interventions to establish their efficacy and efficiency.

Faculty Development

Faculty often are role models for students and influence student career choices.^{10/7/8/} Serious efforts must be made to develop interdisciplinary faculty with a commitment to changing the milieu of health professions schools. Curriculum and admission criteria changes, and even fiscal changes, will have to be preceded by faculty development. In addition to exposing university and program-based faculty to community care delivery settings, more community-based care providers will have to be trained as faculty.

Service to the Underserved

Differences in health status between the "haves" and "have nots" of the nation's population continue to be an embarrassment. Delivering adequate and appropriate primary care services to those who currently do not have access is a critical factor in narrowing and eliminating these differences. Future primary care providers must be exposed to and trained in delivery settings that serve these populations.²

Retraining and Reorienting

The necessary changes in the generalist/specialist workforce mix to meet the requirements of a changing health care delivery system cannot come from the pipeline of provider production alone. Reorienting and retraining specialist providers already in practice offers the most direct approach. Redirecting the careers of providers in mid-course is a sizeable hurdle. However, in a health care delivery system that emphasizes the primary care provider as the primary source of health care and the manager of specialty referral, many specialists may seek to change their practice. Mid-career training programs should be established and focus on skill-building in the clinical disciplines of primary care as well as on the capabilities required of providers in managed care settings.

The Role of Other Health Care Providers

Policy targets for primary care supply, distribution, and generalist/specialist mix among other health care provider pools need to be established based upon population needs and cost containment. Although a consumer's inability to pay for services is believed to play a substantial role, the extent to which increasing specialization contributes to the unavailability of services from dentists, pharmacists, podiatrists, and optometrists, for example, is not known. Evidence does suggest that dental graduates are specializing more than ever before.¹¹ Pharmacists are among the most evenly distributed health professionals when measured against population, and could be a source of first contact care for individuals without any alternative. However, it is not clear the extent to which current pharmacy training prepares its graduates for such a role.

The Role of Government

Organized delivery systems, such as managed care arrangements, can provide health care for less than the cost of piecemeal fee-for-service care. Public entities need to influence this change by removing barriers and disincentives to the full use of primary care providers. Yet, they must also protect the quality of care. Health professions education will have to be restructured to meet the demands of health care. Restructuring will not require major new expenditures, however; the current system already devotes substantial resources to health professions education.

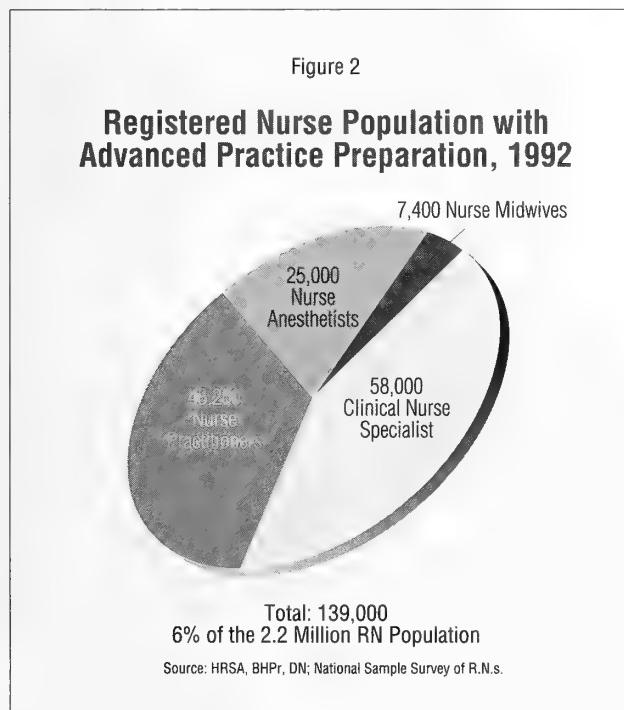
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Analysis of Selected Barriers to Expansion of Clinical Practice by Nurse Practitioners and Certified Nurse-Midwives

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Nurses in "advanced practice" consist of certified nurse-midwives (CNMs), nurse practitioners (NPs), clinical nurse specialists (CNSs), and certified registered nurse anesthetists (CRNAs). The Division of Nursing's March 1992 National Sample Survey of Registered Nurses (NSSRN) estimates there are approximately 139,000 registered nurses with formal preparation as "advanced practice nurses." These represent about 6 percent of the 2.2 million nurses licensed to practice. About 42 percent, or 58,000, of the advanced practice nurses were CNSs with master's degree preparation. Another 35 percent, or 48,200, were NPs. Among the remaining advanced practice nurses were some 25,000 nurse anesthetists, of whom 21,000 were certified, and some 7,400 nurse-midwives, of whom about 5,000 were certified. Eighty-seven percent of the advanced practice nurses were employed in nursing, although not always with an advanced practice title.¹



While each of these "advanced practice" nurse groups contribute significantly to the health care of the population, concerns about the availability of primary care has led to a particular focus on NPs and CNMs. Recent policy papers have included recommendations to extend and expand their practice to improve the health of the population and to meet the national Healthy People 2000 objectives. These recommendations are to expand the number and distribution of NPs and CNMs.^{2/3/4/5} Other recent articles have presented economic models to estimate some of the costs to society when nurses in advanced practice (NPs, CNMs, and CNSs) are not fully integrated, or are underutilized, in the health system.^{5/6}

A number of barriers inhibit the full scope of practice of advanced practice nurses, thus preventing optimal provision of primary health care services to the population. The focus of this discussion is on NPs and CNMs, although some of these barriers also are relevant to the practice of CNSs and CRNAs. These barriers include restrictive practice legislation; limited ability to prescribe and dispense drugs; infrequent or inadequate reimbursement for care provided; physician resistance; inability of current educational programs to produce sufficient numbers of graduates; increasing malpractice insurance rates or lack of coverage; and barriers related to the health care system itself.^{3/7/8/9/10}

Legislation

Some authors consider the major barrier to be the restrictive State provisions governing scope of practice and prescriptive authority. Safriet, for instance, notes that restrictive nursing legislation does not accommodate the changing boundary between the practice of medicine and nursing.⁸

Scope of Practice

Most States require licensure and national certification of NPs and CNMs. State laws are inconsistent, however, regarding the scope of nursing practice. Activities that may be sanctioned in one State without physician intervention, approval or protocols, may not be allowed in another. To date, although most States have legally acknowledged the practice of NPs and CNMs, most have restrictions limiting their scope of practice. Some of the restrictions result from the fact that the titles and scope of practice used in the legislation often do not match the variety of NPs and position titles found in practice, i.e., nurse clinician, NP, advanced practice, and a variety of specialty titles. This lack of uniformity in title is confusing to policymakers and insurance carriers and does not reflect the increasing national uniformity in educational preparation, examinations to assure competence, and practice.

Often regulations are made through joint action of the Board of Nursing and the Board of Medicine, or by joint committees comprised of NPs, CNMs, MDs, and pharmacists. Safriet points out that "even when a legislature has sanctioned advanced practice nursing, much depends upon the body charged with subsequently elaborating the scope of practice." She notes that there is a strong possibility that anti-competitive motives will dictate restrictions that are not justified on public safety grounds when the task of developing regulations is delegated to mixed-regulators. In addition, other disciplines may not understand the educational preparation or full scope of practice of NPs or CNMs.⁸ Safriet also points out that other professions are licensed by boards composed of their colleagues. Likewise, she states, the regulation of nursing should be carried out by each State's Board of Nursing (BON). A multiprofessional approach to regulation has the potential for bias stemming from professional territoriality, and financial and competitive concerns.

Restrictions on the scope of practice found in various State laws and regulations generally center around formal relationships with physicians spelled out in written practice agreements, protocols, collaborative guidelines. They also center around requirements for physician direction and/or supervision. They include restrictions of practice to certain facilities or geographic areas. They may vary in terms of nature of the required physician collaboration; i.e., whether the physician needs to be physically present in the room where care is being provided, within vocal range, on the premises, or available by telephone. However, these State restrictions often do not apply when the NP or CNM practices in a rural or inner city clinic within the State.

Innovative use of telecommunication and information systems may be inhibited by such regulations. With current communication technology, consultation and co-management of clients/families/and certain conditions often can be effectively accomplished by telephone, computer or conference call in the absence of a physician. Such restrictions limit the scope of practice of NPs and CNMs and their ability to increase access to quality care.

Prescriptive Authority

The major policy question is whether a State will acknowledge and authorize the prescribing practices of NPs and CNMs.

Prescription authority (prescription of drugs and other treatments) of NPs and CNMs also varies from State to State. The first State provision for limited prescriptive authority for NPs was in 1975 and for CNMs in 1977. Currently, explicit statutory or regulatory provisions exist in more than 40 States. However, these authorizations vary in the degree of independence they afford, and in the types of drugs and devices which may be prescribed. Many States restrict prescriptive activity in similar ways as for scope of practice, i.e., by geographic or practice settings. Others impose requirements for written protocols and/or physician supervision or direction. The changing nature of pharmacological intervention counsels against rigid statutory restrictions.⁸

Restrictions on prescriptive authority can make it difficult for NPs and CNMs to obtain the Federal Drug Enforcement Administration (DEA) registration required to prescribe, administer or dispense controlled substances. In addition, because some insurance companies use DEA numbers as provider identifiers for reimbursement, NPs and CNMs who do not have their own registration number are prevented from gaining reimbursement from these companies. Controlled substances are defined by the Federal Controlled Substances Act of 1970, which requires that dangerous drugs be included in a list of "schedules" prepared by the Federal Drug Administration (FDA). Dangerous drugs are those with no accepted use, a significant potential for abuse because of their addictive properties, or major psychoactive properties. The schedules, I - V, rank drugs by their potential for addiction and abuse.

The DEA issues registration numbers to all providers authorized to prescribe, dispense, administer or conduct research with controlled substances under the laws of the State in which they practice. To address this issue, the DEA has issued the final rules regarding the registration of "midlevel practitioners," including CNMs and NPs if they are authorized to dispense controlled substances by the State in which they practice.¹¹ If registered, advanced practice nurses would be able to dispense controlled substance schedules II-V as directed by State law, regardless of their collaborative arrangement.^{12/8/13} Some State regulations restrict the schedules of drugs NPs or CNMs are permitted to prescribe to those with less potential for abuse and with more certain therapeutic applications.

Payment

State and Federal reimbursement laws determine which services are reimbursable; whether those services are consistent with the NP's or CNM's scope of practice; the amount of reimbursement, and whether that amount is the same or different from that provided to physicians. The Federal government generally sets the pattern for other insurers and the States. Federal law has mandated direct Medicaid reimbursement for CNMs since 1980, and for pediatric nurse practitioners (PNPs) and family nurse practitioners (FNPs) since 1989, whether or not they are directly supervised by a physician. The State legislation in general follows Federal guidelines for programs funded by the Federal government.

Some States are not in compliance with Federal legislation. Currently, NPs are eligible to receive direct third-party reimbursement in 38 States; however, only 24 States have legislatively mandated third-party reimbursement.¹² CNMs are eligible for third-party reimbursement in 27 States.¹⁴ The NPs and CNMs are reimbursed according to the State legislative framework.

Whether reimbursement can be made directly to the provider, the facility, or is to be billed through a physician affects autonomy and independent practice. While PNP's and FNP's can be reimbursed directly for the Medicaid services they provide; other NPs such as those focusing on care of adults, women, and school-age children, cannot. Many of these NPs provide needed care to the same population as those who are reimbursed by Medicaid. Expansion of reimbursement to additional types of NPs, and for a wider range of populations and conditions, would increase access to quality care.

FNP's and PNP's also have barriers to reimbursement in States where the statute for advanced nurse practitioners does not designate FNP or PNP as specific titles.

Some States have laws requiring private insurers to reimburse NPs for their services; but often this coverage is optional. Although NPs and CNMs are eligible to receive some form of direct, third-party reimbursement in all 50 States, until recently most private insurance companies had not expanded coverage to include NP or CNM services. NPs and CNMs may have to convince each employer and each private insurance carrier of the need for coverage when an employer negotiates a plan for their employees with a private insurance carrier. Without specific State legislation, some insurers refuse to offer reimbursement. In addition, self-insured companies are exempt from the mandated coverage requirement. These companies often cite their option to use their business judgment with regard to which providers will be reimbursed.^{8/15} Further, they often do not cover primary and preventive care, which offer the possibility for significant improvement in health status and frequently are delivered by NPs and CNMs.

Where covered, Medicare restricts payment to 65 percent of the physician fee schedule, unless the NP or CNM is working in services funded through the Rural Health Clinics Act. In 1993, CHAMPUS began implementation of Medicare payment policies. However, some major Federal Employee Health Benefit plans eliminated NPs and CNMs as preferred providers by major carriers, which means that the Federal employee who wants care from those providers must pay additional fees to receive it.^{15/16}

The States have broad discretion in determining fee levels and payment methods. There are also limits on reimbursement amounts based on a percent of a physicians' fee schedule. Medicare Part B services have been reimbursed following the "reasonable charge payment" concept. In 1989, based on the recommendation of the Physicians Payment Review Commission (PPRC), Congress mandated the development of a fee schedule to replace the reasonable charge system and directed the PPRC to study the implications of including "nonphysician providers" (NPPS) in the fee schedule. The ACNM requested the PPRC to wait for the results of a Robert Wood Johnson funded study on CNM care to vulnerable populations before determining reimbursement rates. Issues of cost containment and unique care provided by NPs and CNMs are under review.¹⁷

The Resource-Based Relative Value Scale (RBRVS) carries with it further potential problems for NPs seeking Federal reimbursement, and is part of the complex discussions on cost containment.⁸

Relationships With and Understanding by Physicians and Others

Major barriers to full use of NPs and CNMs are lack of knowledge and resistance on the part of physicians, both generalists and specialists, to their full participation on the health care team.^{7/8} The National Health Service Corps (NHSC) has experienced delays and problems in identification and development of appropriate placements for students who have been awarded scholarships and graduates who have agreed to the loan repayment program in exchange for working in an underserved area. This difficulty in placement can be expected, because unless a group of providers, or a community, has worked with an NP or CNM, they often do not fully understand the potential benefits of adding an NP and/or CNM to their interdisciplinary health care team.

The Federal Trade Commission (FTC) has acted to stop boycotts aimed at limiting competition among health-care providers, analyzed issues relating to the denial of hospital privileges to NPs and CNMs, and scrutinized State and Federal statutes and regulations for anti-competitive provisions. The FTC's initiatives which have involved CNMs have centered on hospital privileges, malpractice insurance for backup physicians, and third-party reimbursement.

Current Work in Progress

Several studies designed to provide insight into the nature of these practice barriers are underway. Information derived from them is expected to assist policymakers in developing strategies to alleviate some of the barriers.

Recent studies about barriers to nurse-midwifery care indicate a lack of knowledge about nurse-midwifery care among both the public and policymakers.^{7/9} Steps recommended to eliminate barriers included studies that both document the contributions of nurse-midwives to vulnerable populations, and the effect of these contributions on health-care costs.⁷ A current, ongoing

American College of Nurse-Midwifery study, funded by the Robert Wood Johnson Foundation, is designed to provide data on nurse-midwifery care, with particular attention to vulnerable populations. The impact of legislation and reimbursement policies on the populations served, the nature of the services provided, the fees charged, and the total costs of care are addressed in this study, along with other actual and potential barriers.¹⁸

Information on the nation's supply of NPs will be updated by a Division of Nursing study designed to determine the number of registered nurses in the United States with certification as a NP or CNS; to examine the type, nature, and location of their practices; to identify the populations they serve; and to describe professional characteristics.

The Division of Nursing also is carrying out a project to examine the parameters of the practice roles of NPs and CNMs and other factors that need to be considered in developing projections of the number required in the future. Subsequently, the Division plans to examine these projections in relation to the number of CNMs and NPs anticipated to be available.

Conclusion

Issues related to State and Federal practice barriers affect the ability of NPs and CNMs to increase access to quality care. The nature of the practice of NPs and CNMs, which addresses primary health care and prevention, and which centers on the client's/family's strengths and priorities, can, in the long term, help reduce health care costs, improve access to quality health care and promote positive health outcomes.

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Barriers to Physician Assistant Practice

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Physician assistants (PAs) are educated as primary care generalists in programs that follow a medical model of patient care. Upon graduation they are prepared to practice medicine under the supervision of a licensed physician, providing patients with services ranging from primary to highly specialized surgical care.

Studies such as the 1986 Office of Technology Assessment (OTA) report have concluded that PAs improve access to primary health care and that the quality of care they provide, within their skills and competencies, is equivalent to that of physicians. In addition, the OTA report found that "the use of PAs results in productivity gains and cost reductions."¹ Although major strides have been made in removing barriers to their practice, obstacles remain that prevent them from using their skills to the fullest. These obstacles include restrictive State medical practice laws and regulations, particularly the lack of prescribing privileges, and inconsistent State Medicaid and Medicare reimbursement policies.

Physicians conceived and fostered the idea of PA practice in the mid-1960s. It is not surprising, then, that physicians generally accept PAs.² For their part, PAs are committed to the team approach to patient care in which each profession is recognized for its unique skills and contributions. Unlike nurse practitioners, who seek greater autonomy, PAs believe the most appropriate and logical individual to supervise the health care team is the physician.³

PAs' scope of practice is determined by several factors: State laws and regulations, the supervising physician's delegation of responsibilities, the PA's education and experience, and the specialty and setting in which they work. Not all States allow PAs to participate in the system that regulates them. In those that do, PA participation occurs through their having seats on medical licensing boards; on PA committees to those boards; or through the creation of separate PA licensing boards. Where PAs take part in regulating their profession, they tend to have acquired greater autonomy and a broader scope of practice, especially in rural and remote settings.⁴

State Legislative/Regulatory Issues

By 1992, all States except Mississippi had enacted laws and/or regulations recognizing PAs. Recognition serves two main purposes: (1) to protect the public from incompetent performance by unqualified PAs, and (2) to delegate the appropriate tasks to PAs.⁵

Specific elements in statutes and regulations that facilitate the best use of PAs include standardized qualifications for PAs; supervision requirements in which the particulars are left to the physician/PA team; the absence of requirements for on-site physician supervision; a scope of practice including any task delegated by a physician and within the PA's skills and competencies; unlimited prescribing authority as well as limited authority to dispense drugs, especially in remote areas that may not have a pharmacy; and some provision for temporary licensure.⁶

A PA's standard qualifications, endorsed by the American Academy of Physician Assistants (AAPA) and adopted by all but a few States, include two criteria: (1) graduation from a PA program accredited by the American Medical Association's Committee on Allied Health Education and Accreditation, and (2) successful passage of the national certifying examination administered by the National Commission on Certification of Physician Assistants (NCCPA).⁵

Supervision Requirements

Although PAs are always legally under the supervision of a physician, the definition of supervision varies widely. Forty-two States, including the District of Columbia, allow physicians to supervise PAs without being on the premises.⁷ Such a provision is critical if PAs are to be used most effectively in areas underserved by physicians.

Overly restrictive supervision provisions found in State laws and regulations have resulted in limits being set on the number of supervisors a PA may have; limits on the

number of PAs a physician may supervise; requirements that the physician be on site at all or most of the time; and a burdensome amount of paperwork on physicians before they can hire PAs.^{8,9}

Scope of Practice

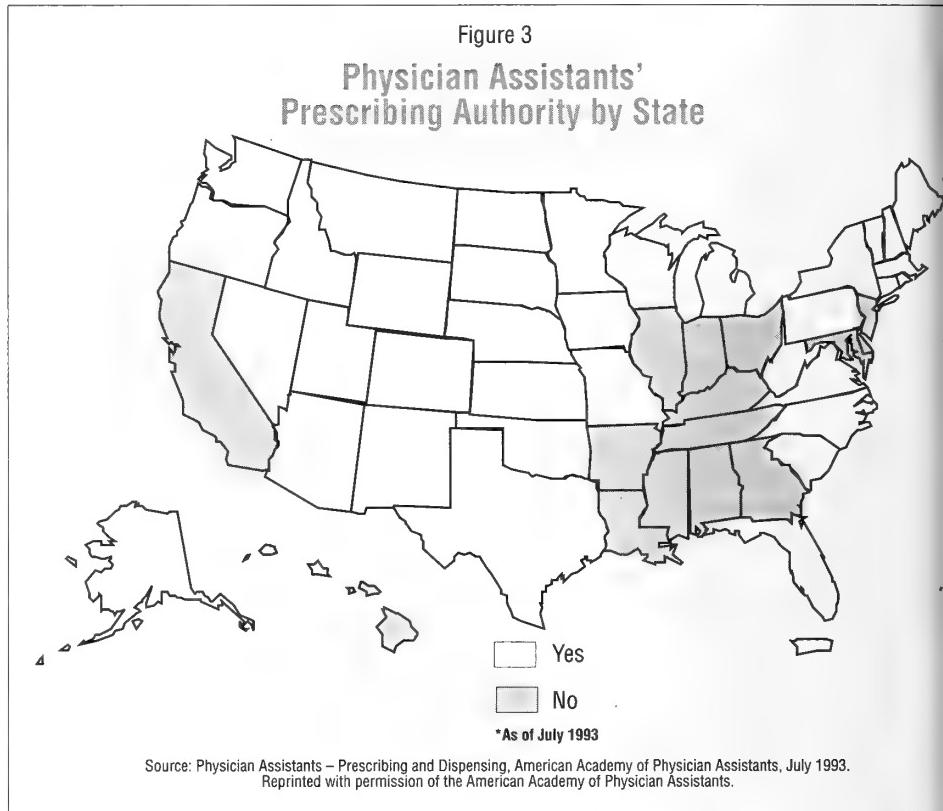
Those who developed the concept of physician assistant envisioned the scope of practice for these professionals as being determined solely by their physician supervisor. Nonetheless, since the 1970's, States gradually have established and increased their own restrictions.⁶ Such restrictions may cover procedures or responsibilities; lists of authorized tasks; requirements for separate board approval of procedures not on the list; and requiring the supervising physician's to submit elaborate job descriptions, utilization plans, and protocols.

Prescriptive Authority

Thirty-five States, the District of Columbia, and Guam allow PAs to prescribe medications.¹⁰ Two-thirds of these States allow PAs to prescribe controlled substances.

In 1993, PAs had 152 million patient contacts and wrote an estimated 175 million prescriptions.¹¹ Seventy-one percent of all PAs and 83 percent of those in rural areas practiced in States granting prescriptive authority.¹²

States that grant prescriptive authority, however, may limit it to non-controlled substances or drugs on a board-approved formulary.⁹ Patient management, especially in remote satellite settings, is severely hampered without the ability to prescribe a full range of medications. PAs who practice in States without this authority tend to be restricted to subspecialties and inpatient settings.^{12/9}

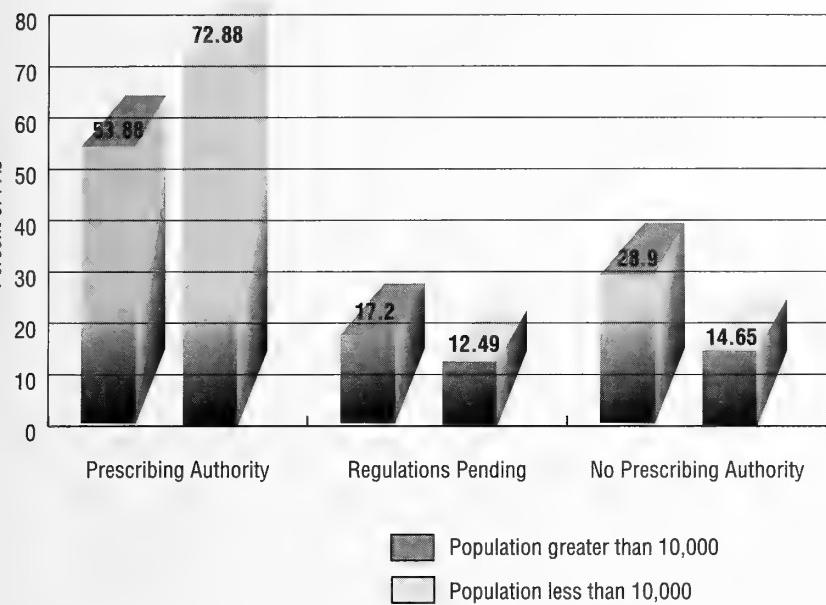


Paradoxically, States without prescriptive authority also appear to be those in greatest need of primary care services. In 1988, 7 million of the 16 million rural residents who lived in Federally designated primary care Health Professional Shortage Areas (HPSAs) resided in a cluster of Southeastern and Midwestern States without prescriptive authority.^{12/13}

The AAPA has conducted an analysis of practice patterns in Montana and Texas, where prescriptive authority did not exist in 1989, but was subsequently implemented. In Montana, 34 PAs were practicing in 1989. By 1992, two years after they won prescriptive authority, their numbers had nearly tripled to 96. In 1989, only 5 percent of PAs in Texas were practicing in rural

Figure 4

Distribution of PAs in Rural Practice by State Laws on Prescribing Authority



Source: Willis, J. Barriers to PA Practice in Primary Care and Rural Medically Underserved Areas. Journal of the American Academy of Physician Assistants. June 1993.
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For the past two years, PA students have been eligible for the National Health Service Corps (NHSC) Scholarship Program which requires that upon graduation, they work in a medically underserved site. However, since the NHSC requires that the scholarship recipients comply with the laws of the State in which they are to practice, and the NCCPA examination is given several months after graduation, newly graduated PAs could be forced to find employment elsewhere, and could be in danger of defaulting on their NHSC service commitment.

Temporary licensure might also facilitate the hiring of locum tenens substitutes to replace PAs for brief periods of time. Like physicians, PAs are reluctant to work in rural areas where back-up coverage is scarce and the potential for burn-out high.^{15/16/17}

Recognizing the increased potential for "burnout" among PAs and to address the other disincentives associated with attracting PAs to rural practice, some States such as Montana have authorized temporary duty licenses to be used to hire replacements when permanent PAs take vacation or complete continuing medical education (CME) credits.¹⁷ This is of increased importance to PAs, since they are to complete 100 hours of CME credits every 2 years and take a recertification examination every 6 years in order to maintain certification.

The vast majority of States, however, either do not have a locum tenens system in place for PAs, or have a system that requires an unreasonable amount of advance notice or excessive paper work for approval to practice as a substitute.⁹

communities. However, after passage of prescribing legislation, and the subsequent approval of the use of PAs in rural clinics, the percentage increased to 15 percent.¹²

Temporary Licensure/Locum Tenens

Some 37 States have a provision for temporary licensure of new PA graduates while they wait to take the NCCPA examination or to receive examination results. Because a majority of recently graduated PAs have incurred education-related debt and many are older adults with families to support, it is unreasonable to expect that they remain unemployed in their field for a lengthy period of time. The test typically is offered in November, often 6 months after graduation, and the results are not available until January or February.

Medicare/Medicaid Reimbursement Regulations

Medicare

Medicare Part B policies provide uneven reimbursement for PA primary/ambulatory care services from State to State, because carriers choose to interpret regulations differently, particularly the "incident to" clause. Reimbursement of PA services in hospitals is less problematic, since Medicare Part A covers the services of hospital employed PAs. The law also allows hospitals to bill for PA services under Part B, although hospitals cannot bill for the same service under both.

While Medicare Part B coverage of physician services provided by PAs is clearly allowed in hospitals, nursing homes and rural HPSAs, confusion arises in the case of outpatient services delivered in rural areas that are not designated as HPSAs and in urban areas. In these locations, services provided by PAs may be billed under the "incident to" provisions of Medicare regulations. "Incident-to" services are those which are typically performed in a physician's office, under his/her direct supervision and billed as part of the physician's overall charges. However, private carriers have not consistently interpreted what services (if any) they will cover under this language. The "incident to" provision also has stricter supervision requirements than exist in many State laws.

Since the PA's scope of practice and the physician's scope of practice overlap, the definition of covered services has become muddled. Many carriers began permitting physicians to bill for any service provided by a PA as long as the supervising physician was in the building. Others continue to limit coverage to services such as injections and blood-pressure checks. The lack of consistency among carriers has caused considerable confusion both for physicians and PAs and has discouraged some physicians from hiring PAs.²³

There is also considerable variation in the Medicare reimbursement for services provided by PAs in all settings.

All Medicare reimbursement goes to the employing practice, facility or physician, not to the PA. PAs do not seek to have Medicare reimburse them directly for their services based on the belief that this would compromise the PA/physician relationship and deter clinics and hospitals from hiring them. If, however, the Health Care Financing Administration law made reimbursement for PA services identical in all settings and removed the "on-site" physician supervision requirement, it would reduce the complexities and paperwork associated with the reimbursement process for employers.

Medicaid

In principle, 41 States cover PA services under their Medicaid program. More than half, however, lack specific regulations to determine which services are covered.²⁰ The fact that no Federal Medicaid mandate (other than the Rural Health Clinic Services Act) requires States to cover PA services may have influenced these States not to have developed specific regulations for PA coverage.²⁰

Medicaid programs typically cover PA services as long as these services are covered by their plans when provided by a physician, but the Medicaid requirements may be more restrictive than the State practice acts governing PAs. The Prospective Payment Review Commission reports that 23 States require on-site physician supervision of PAs under Medicaid even though in 16 of these States PA practice acts do not require this supervision.²² Practitioners in Federally-certified rural health clinics must still abide by supervision requirements contained in State law or regulations. Federal regulations specify that for a clinic to be certified under the RHCSA, the physician medical director must be at the clinic at least once in every 2-week period. State law, however, might require that the physician be on-site more often.¹⁴

Education

Enrollments in PA programs are burgeoning and the number and quality of applicants for these programs is greater than ever. In academic year 1992-93, enrollments in PA programs was 3,832, up by 424 over the previous year and by nearly 1,500 over 1987-88 enrollments. The average enrollment per program also increased in academic year 1992-93 to 35 per class, the largest on record. Similarly, the ratio of applicants to enrollees increased to 6.25:1 during 1992-93, compared to a low of 3.3:1 in 1987-88.²³

In May 1993, the Accreditation Review Committee on Education for the Physician Assistant tallied 61 PA programs compared to 55 in 1991, with an additional 15 to 20 programs in development.^{24/25} Most of these programs are being developed in response to needs for more primary care providers in rural and urban underserved areas.

Currently, PA training programs are stretched to the limit regarding qualified faculty. More faculty and program directors must be recruited and trained, particularly those of minority backgrounds who can serve as mentors and role models.²⁶ Although improvements have been achieved in recent years, the attrition rate for minorities (17.4 percent) was four times higher than majority students (4.9 percent) in 1992.²³

Finally, physician supervisors should be trained not only in the skills of precepting PA students, but also in delegating tasks to PAs in practice. A physician's lack of knowledge or ability on how to delegate can greatly reduce PAs' effectiveness. Knowing how to effectively employ PAs may also reduce physician resistance to them.^{9/27}

Conclusions

With their broadly-based preparation in primary care, shorter and less costly training period, and proven efficacy, PAs can be an attractive alternative to physicians.²⁷ The renewed appreciation for PAs as cost-effective and qualified primary care providers in the Federal, State and private sectors has led to proposals to double their number by the year 2000.^{25/27/28}

If PAs are to practice at their optimum, however, they must work in a supportive environment. Unnecessary barriers must be removed, particularly overly restrictive State legislation and regulations and complex, inconsistent Medicare and Medicaid policies.

With the prospect of having increasingly larger numbers of PAs in the health workforce, it also will be necessary to implement a comprehensive faculty development initiative. Such an initiative should include teaching, research, and leadership development components. And, because physicians do not consistently understand the role and educational preparation of PAs and the scope of their practice, it is essential that they receive training in how to best employ these providers. One way to do this is to encourage medical schools and residency programs to train PAs with medical students, and develop programs that will enable physicians to work successfully with PAs after graduation.

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Status of Minority and Women Health Care Personnel: Availability to Provide Care to Special Populations

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Women historically have comprised the majority of personnel in nursing and in many allied health occupations. Moreover, for the past two decades, women and members of racial and ethnic minorities have made significant inroads into health professions once overwhelmingly the province of white men. The largest gains for most minority groups, however, occurred during the mid- to late-1970s. Since that time, with the exception of Asians, and, in some professions, Hispanics, minority representation in the health fields has been relatively stable.

Women, on the other hand, have continued to contribute significantly to the growth in traditionally male-dominated health professions throughout the 1980s and early 1990s. The majority of the increase in the number of first professional degrees awarded in the health professions during the 1980s was a result of increases in degrees to women. The professions with overall declines in the numbers of first professional degrees conferred (medicine, dentistry, and optometry), continued to show increases in the degrees awarded to women, but were insufficient to offset the declines in those awarded to men. The substantial gains in the training of women are reflected in their increased percentages among the supply of health professionals. The number of active women physicians, for example, increased more than 91 percent between 1980 and 1990, and their percentage among the total supply of active physicians increased from 11 to 17 percent.¹ Table 1 illustrates a similar increase in representation for women in other health professions.

The increase in minority women health professionals also was substantial during this period. For example, the numbers of first professional degrees awarded to Hispanic

women in the fields of allopathic, osteopathic and veterinary medicine, as well as in dentistry, optometry, pharmacy, and podiatry ranged from 118 percent to 600 percent higher than the numbers awarded in 1981. As Table 2 indicates, the number of degrees to women in other minority groups increased similarly. Despite the seemingly high percentage increases, however, minority women still comprise only a very small percentage of the graduates from health professions schools and the supply of health professionals in this country. Yet available data indicate that, overall, the career choices and practice patterns of minority women practitioners are more in line with national goals than are the career choices of those who now dominate the field. For example, in all racial and ethnic groups, women are more likely than men to become primary care physicians. And among women, the majority of young black (60 percent) and Hispanic (57 percent) physicians are in primary care while slightly less than half (46 percent) of young white and "other" minority women physicians are.³

Table 1
**Estimated Percent of Women Practitioners
in Selected Health Professions: 1980 and 1990**

HEALTH PROFESSIONALS	1980	1990
PHYSICIANS	11.1	17.0
DENTISTS	3.8 ¹	9.5
PHARMACISTS	18.3	28.9
OPTOMETRISTS	7.6 ²	14.6

¹1982 data ²1984 data

Sources: American Medical Association, *Physician Characteristics and Distribution in the U.S. 1992 Edition*
DHHS Health Resources and Services Administration, *Health Personnel in the United States—Eighth Report to Congress*

For most racial/ethnic minority groups, increases in the numbers of new health care professionals during the 1980s reflect increases in the number of degrees awarded to men as well as to women. However, for blacks in medicine and dentistry, the gains were solely those of black women; the number of first professional degrees to black men in these fields declined during the decade. Increasing the numbers of underrepresented minority health professionals requires continued, systematic, and substantial gains by both sexes. The loss of black male professionals in some fields and their failure to make the same

gains as women in others, result in critical setbacks. For example, if the number of degrees to black men since 1981 had increased at the same rate as the number of degrees to black women, there would have been 48 more new black dentists in 1990 instead of 22 fewer. Medicine presents a similar scenario. If the number of medical degrees awarded to black men had grown at the same rate as the number of degrees to black women, there would have been more than 200 more newly trained black physicians in 1990, instead of 21 fewer.

These declines have been attributed to the disproportionate participation of black men in a number of trends in education, including declining numbers of male applicants to health professions schools; the declining popularity of undergraduate premedical majors; and, declining college participation rates for black Americans; and their higher high school drop-out rates. Factors behind these trends include a high rate of poverty and lack of economic security.⁴

Table 2

Percent Change in the Numbers of First Professional Degrees Conferred to Women by Health Field of Study and Race/Ethnicity, 1981-1990

HEALTH PROFESSIONALS	ALL WOMEN	WHITE	BLACK	HISPANIC	AMR.INDIAN	ASIAN/PACIFIC
ALLOPATHIC MEDICINE	34.0	20.1	42.9	117.8	83.3	313.7
OSTEOPATHIC MEDICINE	135.5	130.6	-20.0	600.0	400.0	216.7
DENTISTRY	60.3	26.9	24.6	464.7	500.0	326.7
PHARMACY	150.5	146.7	108.3	200.0	-100.0	176.9
OPTOMETRY	105.8	99.4	133.3	233.3	-100.0	142.1
PODIATRY	163.8	133.3	257.1	250.0	0.0	550.0
VETERINARY MEDICINE	86.0	83.5	9.5	600.0	300.0	216.7

Source: Compiled by the Division of Disadvantaged Assistance, BHPr based on data from the National Center for Education Statistics as reported in *Black Issues in Higher Education*, April 9, 1992, pp.36-37

Population Changes and Implications for Health Care Needs

A significant number of the national health goals for the Year 2000 involve specific objectives for improving the health status of women and children, particularly those in low-income and minority groups. Meanwhile, minority cohorts of children, women of child-bearing years, and elderly women are expected to increase, exacerbating the need for culturally and gender-sensitive providers. Table 3 illustrates the projected increases in population for each of these high-demand demographic groups.

Access to preventive health services, such as mammography, breast examination, Pap test, and blood pressure monitoring, has improved for many women. Significant variations still exist, however, in the use of these services among different groups of women.⁵ Changes in the supply of women practitioners (especially minority) have important implications for overcoming some of the barriers to improving women's health care. The likelihood of increasing the acceptability of services increases with the supply of minority women practitioners

Table 3
**Projected Population in Selected Demographic Groups
 by Race/Ethnicity and Percent Change
 1992, 2000, and 2020**

POPULATION GROUP	1992	2000	2020	PERCENT CHANGE	
				1992-2000	1992-2020
WHITE					
WOMEN 15-44 YRS.	42,733	41,008	37,168	-4.0	-13.0
CHILDREN <15 YRS.	38,000	37,589	34,646	-1.1	-8.8
WOMEN 65+ YRS.	16,537	17,069	22,616	3.2	36.8
BLACK					
WOMEN 15-44 YRS.	7,762	8,146	9,216	4.9	18.7
CHILDREN <15 YRS.	8,318	9,120	10,787	9.6	29.7
WOMEN 65+ YRS.	1,565	1,726	2,898	10.3	85.2
HISPANIC					
WOMEN 15-44 YRS.	5,935	7,256	10,586	22.3	78.4
CHILDREN <15 YRS.	7,146	8,817	12,682	23.4	77.5
WOMEN 65+ YRS.	765	1,100	2,550	43.8	233.3
AMERICAN INDIAN					
WOMEN 15-44 YRS.	456	484	602	6.1	32.0
CHILDREN <15 YRS.	562	607	776	8.0	38.1
WOMEN 65+ YRS.	69	87	160	26.1	131.9
ASIAN/PAC. ISLANDER					
WOMEN 15-44 YRS.	2,126	2,937	5,002	38.1	135.3
CHILDREN <15 YRS.	1,924	2,758	4,755	43.3	147.1
WOMEN 65+ YRS.	289	503	1,407	74.0	386.9

(Numbers in Thousands)

Source U.S. Bureau of Census. *Current Population Reports Series P25-1092 "Population Projections of the United States by Age, Sex, Race, and Hispanic Origin: 1992 to 2050."*

and the language and cultural compatibility they offer.

Although both black and Hispanic women physicians are more likely than others to practice primary care, their numbers are so small that the likelihood of encounters between them and the expanding population of minority women is limited. More than half (62 percent) of the young primary care physicians in the U.S. are white men (about 16,000). In contrast, there are fewer than 600 black men, 500 black women, 1,000 Hispanic men and 300 Hispanic women young physicians practicing primary care across the country. Another 1,600 men and 1,100 women of other minority groups also practice primary care.⁶

The training of female obstetrician/gynecologists, nurse practitioners, and nurse midwives also is important to meeting national objectives relating to women's health. The number of women OB/GYNs has more than doubled since 1980. They currently comprise 8 percent of all active women physicians, and 22 percent of all OB/GYNs.⁷ Black women OB/

GYNs are estimated to constitute 11 percent of all black women physicians and 25 percent of all black OB/GYNs.⁸ Their representation is even greater among young physicians, where they comprise 34 percent of black OB/GYNs. Although women comprise less than one-fourth of young Hispanic OB/GYN specialists, among other minorities the proportion of women as part of young OB/GYNs rises to about 40 percent. Despite the substantial percentages of young minority women physicians specializing in OB/GYN, however, less than 3 percent of all young OB/GYN specialists are black women and only about 1 percent are Hispanic women.⁹

Conclusions

Overall, enrollment trends suggest that women will continue to increase substantially in representation among graduates from health professions schools and even more of the health care in this country will be provided by women practitioners. Kletke and others have projected that by the year 2010, 29 percent of the supply of general/family practice practitioners, 32 percent of general internists, 46 percent of OB/GYNs, and 54 percent of pediatricians will be women.¹⁰ These projected changes, along with an anticipated expansion of the role of nurses, suggest that women will be providing a significant portion of the care to women and children in the future.

Health professions training data indicate that minority women will continue to increase among the supply of health care professionals. However, their small numbers will limit their availability to the populations who need them the most. Minority practitioners as a whole (regardless of gender) are unlikely, given the current numbers receiving training, to experience increases in supply necessary to keep up with projected increases in the nation's minority populations. This is not to say the provision of health care to minority populations is solely the province and responsibility of minority health care practitioners. All health care providers will need to become more aware of and better able to relate to the special needs of this growing segment of the population.

Despite more than two decades of intervention, the declining numbers of black male graduates in some health professions, and the continued underrepresentation of some other minorities, indicate the need for increased efforts in recruitment and retention, with an emphasis on black men. Encouragingly, the Association of American Medical Colleges (AAMC) has reported a 24 percent gain in black male applicants to medical school for the 1993-94 academic year.¹¹ Nonetheless, eliminating the substantial underrepresentation of all minority health care professionals will continue to present significant challenges in the coming years.

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Health Care and Rural America

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Introduction

Although rural areas face many of the same health care concerns as urban areas, including large numbers of uninsured and underinsured persons, rising costs, aging populations, and increased prevalence of HIV infection, drug abuse, and chronic illnesses, these problems are exacerbated in many rural areas by long-standing shortages of health personnel and health care providers. About one-quarter of the American people live in rural or non-metropolitan areas. In 15 States, the proportion is more than one-half.¹ While diversity is a major characteristic of both rural and urban communities, non-metropolitan and metropolitan populations differ in ways that are important to health services demand.

Non-metropolitan areas have greater proportions of persons over age 65; higher prevalence of chronic conditions such as diabetes, kidney disorders, and emphysema; and higher rates of physical impairment than do metropolitan areas.^{2/3} Rural family incomes average about one-quarter lower than those of urban families, and slightly higher proportions of non-metropolitan residents under age 65 lack either private or public health insurance.^{4/5} Transportation problems are also a major concern for many rural residents, especially among the elderly, who may not have the ability to travel long distances to obtain health care services.

As noted, however, many rural areas experience greater shortages of health personnel than metropolitan areas. Seventy percent of all counties designated as Health Professions Shortage Areas (HPSAs), which are defined as having inadequate levels of primary care physicians, are in non-metropolitan areas.⁶ In addition, half of all underserved persons in the Nation live in rural areas. The U.S. Department of Health and Human Services' Bureau of Primary Health Care has estimated that about 2,000 primary care physicians would be needed to remove all the Health Professions Shortage Area designations in rural areas.⁷

Efforts to address the documented need for enhancing health care services delivery in rural areas have been developed at the Federal, State and local levels. These efforts include the involvement of local community leaders, State and regional governments, and regional health organizations in rural network formation. These organizations help to strengthen rural health infrastructures by providing financial incentives to pool investment capital, share some costs of services production, and conduct utilization review. Some rural health providers are also linked with nearby non-rural health systems for purposes of providing peer support, back-up services, telecommunications capabilities, and investment capital, especially for expanding specialized services to vulnerable rural populations.⁸ Efforts will also be necessary to increase the numbers of health practitioners who are properly trained and willing to practice in rural settings.

Some rural health care networks organize health providers and practitioners in groups financially accountable for meeting all the health care needs of their service populations, as well as for oversight and utilization review of medical care practice in their group. Models of such networks have existed in some rural areas for decades (e.g. the Marshfield Clinic in Wisconsin and Geisinger Medical Center in Pennsylvania). Their wide scale establishment, however, would require a great deal of modification and adaptation to account for large diversities in rural communities.

Health Personnel Problems of Rural America

Despite increases in rural physician supply over the past decade and a half, about half as many physicians per capita practice in rural communities as in the United States as a whole.^{9/10} Closures of many rural hospitals, due largely to declining occupancy, low reimbursement, and high levels of uncompensated care, have reduced economic viability for many rural physician practices. Other issues including professional isolation, lack of continuing and other educational experiences for self and family members, slower diffusion of technological advances, and below average compensation, have been cited as reasons for the unwillingness of physicians to begin or remain in rural practice.¹¹ As a result, an estimated 17 million Americans live in rural areas with shortages of primary care physicians, nearly 30 percent of the total rural population.

Many rural areas also have shortages of other health personnel. The same factors impacting on rural physician supply have also been documented as negatively influencing the supply of professional nurses. Only 17 percent of all registered nurses, for example, are employed in rural areas. To some extent, however, RNs appear to have been supplemented by licensed practical and vocational nurses, 32 percent of whom work in rural areas.¹² On the other hand, advanced practice nurses, especially nurse practitioners, appear to substitute for or supplement the small numbers of physicians in some rural areas. Nationally, 18 percent of nurse practitioners worked in non-metropolitan areas in 1992 as opposed to only 12 percent of all patient care physicians.^{13/14}

Physician assistants also are employed in disproportionate numbers in rural or non-metropolitan areas. Thirty-four percent of all PAs were employed in communities of less than 50,000 in 1993.¹⁵ Estimates of the

proportion of certified nurse-midwives who practiced in rural areas, meanwhile, ranged between 11 and 22 percent.¹⁶ Barriers to practice for nurse practitioners, certified nurse-midwives, and physician assistants, however, limit the level of services these practitioners can provide in many States. Nurse Practitioners and PAs, for example, are denied prescriptive authority in 9 and 16 States, respectively. Several States also limit reimbursement of these practitioners to services provided at sites where direct physician supervision is present. Such restrictions are potentially detrimental in rural areas having shortages of primary care physicians.¹⁷

Increased practice regulation and professional credentialing requirements also impact negatively on several allied and associated health occupations, especially in rural areas. Some rural health providers state that regulations imposed by the Clinical Laboratory Improvement Amendments of 1988, which required health care personnel to meet greater educational and certification requirements, make it more costly for rural hospitals and other health care organizations to recruit and retain workers. They cite the fact that vacancy rates for medical technologists and other clinical laboratory staff in rural hospitals are consistently higher than those in non-rural hospitals.¹⁸

Many rural areas also experience shortages of physical and occupational therapists, pharmacists, psychiatrists, clinical psychologists, social workers, and dentists. Analogous to the role played by NPs and PAs are psychologists and social workers who appear to provide a disproportionate share of the mental health services in rural areas, apparently augmenting the dearth of practicing rural psychiatrists.¹⁹ Still, the Bureau of Primary Health Care estimates that more than 1,000 mental health practitioners would be needed to remove all mental health HPSA designations in non-metropolitan areas in 1993. Meanwhile, 1,000 more dentists also would be needed to remove all dental-HPSA designations in non-metropolitan counties in 1993.²⁰

Strategies for Enhancing Rural Health Professions Supply

Strategies to help build health care capacity and increase the supply of health personnel in poorly served areas, including rural communities have been implemented at the Federal, State, and local community levels. In particular, the National Health Service Corps and Community and Migrant Health Centers have attempted to provide greater health care access for rural populations. A study by the Health Resources and Services Administration's Office of Rural Health Policy found that between 1970 and 1990 nearly 70 percent of NHSC practitioners served in rural communities, and that their NHSC experiences were significant factors in the favorable decisions of former Corps physicians to practice in rural areas.²¹

Expansion of programs that encourage increased collaboration among health providers and practitioners, with emphasis on those in rural areas have also been implemented.²² Examples of such programs include rural interdisciplinary training initiatives supported through grants by the Bureau of Health Professions. Successful team training and delivery of health services have been found to alleviate some of the problems associated with professional isolation, inadequate back-up, and the lack of complementary support for many rural health practitioners.²³

Special rural health personnel training initiatives also are sponsored or administrated by the Bureau of Health Professions' Division of Medicine. The Rural Health Medical Education Demonstration Project, for example, administered by the Division and the Health Care Financing Administration provides incentives for small, rural hospitals to conduct demonstration programs to assist physicians in developing clinical experience in rural

areas. The Division's Area Health Education Centers link academic institutions with local planning, educational, and clinical resources to provide educational services to students, faculty, and practitioners largely in rural areas. Additionally, the AIDS Education and Training Centers include initiatives for training rural health personnel in skills needed to stem the HIV epidemic.

Several State, regional, and local initiatives also attempt to increase the levels of health personnel in specific rural areas.²⁴ Some of these, have been sponsored by national organizations such as the W.K. Kellogg and Robert Wood Johnson Foundations, and the Pew Charitable Trusts, as well as by State and local governments.

Conclusion

Several initiatives presently offer opportunities for addressing the significant shortages of rural health personnel. Individual strategies alone, however, are unlikely to solve all of the long-standing health care problems of diverse rural communities. Neither expansion of coverage nor establishment of rural networks by themselves will assure accessibility to suitably trained practitioners, or the equitable distribution of appropriate health providers to serve all the needs of rural America. A coordinated approach is needed to address the particular health problems associated with cultural or language barriers, homelessness, AIDS, teenage pregnancy and childbirth, and mental health that afflict many rural and urban communities alike. These and other problems are presently exacerbated by the unavailability of health care personnel and the lack of an adequate health care infrastructure in many rural areas.

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Preparing a Nurse Workforce Appropriate for Current and Future Health Care Delivery

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Introduction

Key to an adequately prepared nurse workforce is nursing education. Nursing and the nursing educational system face the challenge of filling spiraling demands for baccalaureate level trained nurses and master's prepared advanced practice nurses for nonhospital settings. The focus on these levels of preparation in nursing is a response to trends in the health care delivery system, in society and in the nursing education system itself.

Consider these facts. Although there are fewer managed care systems now than in the 1980's, they are larger, with some counting memberships of more than 1 million.¹

Home care respiratory and dialysis technology is expected to grow annually by 15 and 30 percent respectively.²

These and other indicators point to the need for nurses in community settings. In addition, hospital utilization of the largest share of the total professional nurse supply is expected to dominate demand into the 21st century.

Although in-patient stays have decreased by more than 50 percent in the past 20 years, increases in the acuity of patients in these high-technology settings have caused corresponding increases in the complexity of nursing functions. The base of professional and advanced nursing preparations offer strengths upon which to build dynamic, innovative and responsive programs to meet the challenges of health care into the twenty-first century.

Trends in the Student Population

Composition of the Student Body

In October 1991, 30 percent of the students enrolled in baccalaureate nursing education programs were RNs returning for a first baccalaureate degree.³ Meanwhile, the increasing number of nontraditional, non-nursing, baccalaureate-prepared, second-career students entering nursing is striking. This trend has been credited with the development of 5 new generic master's programs and 16 new baccalaureate programs.⁴ An encouraging aspect of the presence of these nontraditional and post-RN students in these programs is that nurses and non-nurses alike are recognizing the importance and marketability of the baccalaureate. It may be that innovative programming

offered by new and existing programs better meets the needs of both types of students than did full-time, traditional programs. The promise of these somewhat older nurses is dimmed slightly by the observation in the *Eighth Report* that by 2020, more than half of the nursing workforce will be 50 or older. The need to attract the best and brightest of our youth into a career in nursing remains a continuing challenge.

Ethnic and Culturally Diverse Students

Currently, about 16 percent of enrolled students who are preparing to become registered nurses come from racial and ethnic minority backgrounds. A higher percentage (17.6 percent) of the baccalaureate program students were from racially and ethnically diverse backgrounds, including about 10 percent of whom are black. Although these data indicate improvement over earlier years, minority enrollments could be strengthened further through greater recruitment and retainment efforts.

Basic Nursing Preparation

Entry into nursing primarily continues along three pathways: hospital based diploma programs; associate degree programs, mostly based in community colleges; and college or university based programs leading to a baccalaureate. During the academic year 1991-1992, almost two-thirds of all new graduates of nursing (65 percent) earned associate degrees; a marked increase over 10 years earlier when about half the total graduates came from these programs. The percent of graduates from baccalaureate programs, meanwhile, has remained about the same. The irony of this trend is that future demand is oriented toward the baccalaureate-prepared nurse. Community nursing and care provided in ambulatory settings require the broad-based education most commonly found in baccalaureate programs.

It is important to address the educational programs in the context of the needs of the health care delivery system.^{5/6/7/8} Associate degree program content emphasizes clinical practice within the hospital setting, while the baccalaureate program contains proportionately more preparation for practice in nonhospital settings. As Rosenfeld points out, the public health content of the associate degree curriculum, on average, is less than 40 hours, or 2 percent of the total, compared with the baccalaureate content of 173 hours or 16.5 percent. Clinical practice time in ambulatory care and other community settings in the baccalaureate curriculum averages twice that of the associate degree curriculum.⁹ Nurses with nonhospital training are apt to be better prepared for the administrative, consultative and primary care (physical examination, psychosocial assessment and nursing diagnosis) responsibilities they will assume in community and ambulatory settings.¹⁰

Of concern to both types of degree programs is the apparent lack of correspondence between clinical skills taught and expectations of new graduates. One study of 131 programs reported that, of 54 skills identified, new associate degree and baccalaureate graduates had experience in fewer than 12.¹¹ The broader, more scientific, curriculum at the baccalaureate level, however, offered nurses more tools for systematic problem-solving and autonomous practice in the community. Nonetheless, there appears to be a need for additional practice to master high-technology skills. The implications for basic nursing education may be the development of strong partnerships with practice institutions to meet the high technology demands of all settings with qualified graduates.

Graduate Nursing Education

The trend toward both the "curing and caring" roles for nursing argues for the movement toward advanced practice preparation.¹² Advanced practice nursing encompasses the work of clinical nurse specialists, nurse practitioners, nurse-midwives, and nurse anesthetists. The last three categories are the most visible to the public. These advanced practice nurses have in common autonomous practices and direct patient care responsibility in a variety of nonhospital and hospital settings. Demand for advanced practice nurses is expected to climb dramatically in the next century due to the predicted trends in the population and the anticipated changes in the health care delivery system. Ongoing State and private sector changes to the health care delivery system will increase the need for primary health care providers. Increase in demand is especially predicted for nurse practitioners and nurse-midwives who already provide prevention, primary care, diagnosis, treatment, rehabilitation and gatekeeper services in a variety of settings serving a diversity of people. In a few settings, an emerging trend is the utilization of nurse practitioners to replace house staff physicians in hospitals.¹³ Increased complexity in hospital care may also add to the growth in the demand for advanced practice nurses.

Despite the fact that the faculty vacancy rate has not changed for several years, additional faculty with advanced practice nursing expertise will be required. This demand for faculty is of concern because graduate students in nonclinical tracks are twice as likely to be enrolled in nursing administration rather than in nursing education.¹⁴ The role and reward system of clinical faculty may need to be examined in light of the evolving health care delivery system and its demands. Academic reward systems may need to recognize the faculty's clinical practice as a legitimate activity, with status equal to that accorded to research activities.

Advanced Practice Nursing and Special Populations

Many special populations who might benefit from the skills of advanced practice nurses are increasing in size. Both the very young and the very old chronically ill are living longer. The 31.1 million uninsured, 25 percent of whom live below the Federal poverty level, pose even greater demand for primary care, prevention, diagnostic, treatment, rehabilitation and case management activities. The increasing numbers of alcohol and other drug users, those infected with HIV, noninstitutionalized mentally ill, and the homeless have taxed the public health care system beyond its capacity to respond effectively. Access to health care remains a continuing problem for the inner-city poor and rural underserved, many of whom are minorities. The value of prevention, intervention, and the monitoring of people with multiple risk factors for disease is cost-effective, and it is well documented in the literature that both nurse practitioners and nurse midwives have provided quality, affordable and accessible care.^{15/16/17/18/19/20/21/22}

Effective delivery of health care services to special populations points to the need to develop nursing programs with interdisciplinary components specific to the provision of treatment and promotion of wellness in chronic patient populations, especially the aged and children. In addition, the information explosion will require expertise in information management; the dilemmas stimulated by increasingly sophisticated technology will require strengths in bioethics; and the needs of the underserved will require strong clinical skills, patient advocacy activities, and the ability to influence health care policy.

Conclusion

To continue to ease the burden of access to health care services, a pool of baccalaureate-educated nurses must be available. A growing body of literature supports the need for baccalaureate education for effective service delivery in non-hospital settings, and a prerequisite for advanced practice preparation. Innovative, high-technology programs can provide increased access to non-baccalaureate prepared registered nurses to obtain the degree and help ease the current shortage of baccalaureate prepared nurses.

At the master's level, highly skilled, multidisciplinarily educated advanced practice nurses in all specialties working within a variety of practice models are slowly but effectively reducing the need for primary health care providers. The task will be to increase the numbers of advanced practice nurses in an already economically burdened educational system.

These conclusions are reinforced by major national reports, including that of The Pew Health Professions Commission and the W. K. Kellogg Foundation's National Commission on Nursing Implementation Project. The challenge will be to find new and better ways to provide nurses with training adequate to meet the health care needs of the future.

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Health Care Services for Persons with HIV/AIDS

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The human immunodeficiency virus (HIV) epidemic has affected every segment of our health care system. Treatment for those infected, health education, testing, monitoring, and prophylaxis all have required increasing resources over the past dozen years. Still, more services are needed than are being provided. A recent study estimated that as few as a third of those infected are receiving health services for their infections on a regular basis. Even among those with symptoms, only an estimated half received non-home health services regularly in 1991.¹

Estimates of HIV and AIDS in the U.S. Population

The Centers for Disease Control and Prevention (CDC) estimates that between 800,000 and 1.2 million in the United States are infected with HIV, and that some 40,000 persons are likely to become infected each year throughout the 1990's.² In January 1993, the CDC revised its HIV-classification system and case definition for AIDS. Consistent with the revised classifications, the new AIDS definition includes all HIV-infected persons with CD4 counts below 200, and expands the list of 23 clinical conditions in AIDS surveillance by three--pulmonary tuberculosis (TB), recurrent pneumonia, and invasive cervical cancer. The expanded definition is expected to have a substantial impact on the number of reported AIDS cases, especially increasing the number of women diagnosed. Meanwhile, the CDC estimates that 100,000 are co-infected with HIV and tuberculosis (TB), and face a substantially increased risk of developing active TB.³

Current and Projected Numbers of Persons in Treatment for HIV

In a study conducted for the Bureau of Health Professions by the New York State Department of Health, the number of persons receiving HIV services on a regular basis in hospitals, primary care centers, and nursing homes was estimated at 311,000 in 1990-91.¹ Although infected persons also receive informal and support services, home health, and specialized health care, national estimates of such services are not available. Some persons

only begin regular treatment for HIV after their CD4 counts fall below 200, the level that qualifies as a full-blown AIDS diagnosis. Lack of access, especially to primary health care, among poor urban and rural segments of the population poses serious challenges. Historically, these groups have had the least access to health care services, yet they are currently the most vulnerable to new HIV infection. The fact that many programs providing HIV services are operating at or near capacity further limits access.

Efforts to ameliorate this problem have been implemented at the State, local, and National levels. One initiative, administered by the Health Resources and Services Administration (HRSA) through the Ryan White C.A.R.E. Act, supports expansion and development of community-based health and support services for low income persons with HIV in 25 metropolitan areas.⁴ Other initiatives include dissemination of guidelines for increasing HIV testing in hospitals, strategies for increasing HIV services in substance abuse programs, and support for HIV health education.^{5/6/7} Also, HRSA's Bureau of Health Professions sponsors 17 AIDS Regional Education and Training Centers (AIDS-ETCs) for training health professionals in HIV counseling, prevention, and treatment.^{8/9}

Based on current trends in utilization of hospitals, primary care centers, and nursing homes, New York State projects that nationally, more than 140,000 persons will enter regular HIV treatment annually in the 1990s. Because as many as two-thirds of those estimated to be infected may not be receiving regular care, and increased funding for HIV services will likely expand access, the actual number of persons in HIV treatment in the future will likely exceed this estimate.

HIV Treatment in Selected Segments of the Health Industry

Although some HIV-positive persons remain asymptomatic for years, all infected persons require increased health services, ranging from counseling to serological monitoring and therapeutic treatment. The epidemic also requires that increased levels of services be provided to those at high risk of infection and the general public. Because of the multiplicity of services needed and because treatment strategies are changing rapidly, no one model works best. Estimates of HIV services provided vary dramatically by region of the country due to basic differences in regional health care systems, epidemiological differences in the spread of HIV, and differences in reimbursement.

Primary Care Services Provided to HIV/AIDS Patients

The vast majority of patients in regular treatment for HIV receive primary care services in physicians' offices, hospital-based or free-standing clinics, health centers, and hospital outpatient and emergency departments. Nationally, 303,000 persons were estimated to be active patients in primary care HIV-treatment in 1990-91, based on the New York State study. Types and volume of primary care HIV services vary dramatically by patient and provider characteristics.

The New York State study, for instance, divided HIV patients into four groups. Of the approximately one million HIV-infected persons in the United States, 41 percent were estimated to be asymptomatic (CD4 counts above 500), 39 percent early symptomatic (between 200-499), 12 percent symptomatic (between 50-199), and 8 percent late symptomatic (below 50). Fewer than a fifth of the asymptomatic were believed to be in regular treatment for HIV, while a quarter of those with early symptoms and half with symptoms were receiving such care. Given the severity of their illnesses, a surprising one in nine late-symptomatic persons were believed to be not receiving regular treatment in 1991 (see Table 4).

Table 4

Estimated Numbers of HIV-Infected Persons in the U.S. and Numbers Estimated to be Receiving Regular Primary Care Services, According to the Severity of Their Illnesses, 1992

CD4 CELL COUNT	TOTAL PERSONS	TOTAL IN TREATMENT	PERCENT IN TREATMENT
ASYMP: >500	411,000	70,00	17.0%
EARLY SYM: 200-499	394,000	107,000	27.2%
SYMPTOM: 50-199	120,000	59,000	49.2%
LATE SYM: <50	75,000	67,000	89.3%
TOTALS:	1,000,000	303,000	30.3%

Source: New York State Department of Health

Full-time-equivalent (FTE) staff-to-patient ratios and substitution of health personnel differed by personnel category and the intensity of services provided. Staff-to-patient ratios of physicians and nurses differed by factors of about one-and-a-half between high and low volume care levels. HIV care in higher volume settings is more likely to be provided by physician assistants, nurse practitioners, and social workers than in lower volume settings (see Table 5).

Estimates of HIV/AIDS Care in Hospitals

Although most HIV illnesses are manageable through outpatient care with regular provision of therapeutic agents, inpatient hospital services remain critical for persons with acute illnesses. Of the estimated 311,000 persons receiving HIV care on a regular basis in 1991, about 7,000 were hospitalized on any given day. These persons used an estimated total of 2.6 million inpatient days nationwide in 1990-91, according to the New York

Estimated FTE Health Personnel Providing Primary Care to Patients in High and Low Volume HIV Care Settings, 1991

	HIGH INTENSITY	LOW INTENSITY
PHYSICIANS	1:286	1:404
PAs or PNs	1:311	1:2,084
NURSES	1:303	1:537
SOCIAL WORKERS	1:557	1:2,589

FTE Staff/Patient Ratios

State study. It confirmed what other studies have shown — that HIV hospital use varies widely by state.¹⁰ For example, although New York and California each accounted for a fifth of national AIDS cases in 1990, New York had a third of all HIV hospital days while California accounted for only one-ninth.

Clinical and demographic differences in States' HIV-infected populations undoubtedly affect their hospital use rates. Historically, however, Western States, especially California, have responded to the epidemic with fewer hospitalizations and more ambulatory care services than have Eastern States, especially New York. In a 1988 national study of public hospitals, for example, the average annual number of total hospital days per HIV patient in the Northeast was twice that of the West, 40.4 vs. 19.3 days.¹¹ Intensity of services also varied. An average 94 percent of HIV inpatient days in the Northeast were classified as acute care levels compared to 78 percent in Western States.

Resource use also varies within states. In a two-year study of 40 Massachusetts hospitals, for example, 86 percent of AIDS hospitalizations occurred in 20 percent of the hospitals. Hospitals with fewer AIDS discharges used more resources per AIDS patient, measured by admissions to intensive care units, lengths of stay, and cost, than did hospitals with higher proportions of AIDS patients. After

controlling for case severity, however, AIDS mortality was substantially lower in hospitals with greater proportions of AIDS patients.¹²

The health care personnel used in providing HIV services vary by hospital type and size, geographic region, availability of specific personnel, existence of a dedicated AIDS unit, and the extent to which dedicated units share staff with other hospital departments.¹³ Several studies suggest that AIDS-unit patients receive greater levels of care than those in general units. One study found registered-nurse-to-bed ratios in 21 AIDS units to be 50 percent greater than in non-AIDS units of the same hospital.¹⁴ In another study, AIDS-unit patients received more hours of nursing care per day than AIDS patients in general units; the latter received the same level of care as non-AIDS patients.¹⁵ Most AIDS patients, however, are not treated in AIDS-specific units.

Hospital staffing also varies widely among AIDS-specific units. In a sample of 20 dedicated and 4 integrated units in 12 states, FTE registered-nurses-to-patient ratios varied by a factor of four. Ratios of other personnel varied more. One reason for these differences is the fact that many AIDS units share staff with other hospital departments, especially for provision of respiratory and physical therapy, laboratory, and social services. Reimbursement also impacts on staffing levels.

Nursing Home Care for HIV/AIDS Patients

Nursing homes are used by a small number of persons in late stages of HIV illnesses. AIDS nursing home patients, particularly in hospital-based skilled nursing homes, require and receive more hours of nursing services per day than non-AIDS patients. Much AIDS nursing home care appears to be in dedicated AIDS units. The National Commission on AIDS reports that most nursing homes may not be well-equipped to meet the needs of persons with HIV because, unlike many elderly patients, most HIV-infected persons alternate between periods of

illness and relative wellbeing. Although the Commission believes nursing homes must become more capable and willing to provide HIV services, especially as alternatives to hospital care, better access to home health and primary care HIV services should also be encouraged.¹⁶

The New York State study estimated a national average daily census of 1,400 AIDS patients in nursing homes in 1992, based on limited information from six States that collectively accounted for about two-thirds of AIDS case prevalence at the time. Nursing home use in those six States ranged from 8 to 56 patients per 1,000 AIDS cases, or an average utilization rate of 22 per 1,000 cases. Nursing home use in other states was assumed to approximate this average.

Although AIDS patients require more personnel than non-AIDS patients in nursing homes, nursing homes appear to provide a less costly alternative to some hospitalizations. As with hospitals, staffing of AIDS nursing home care varies widely (see table 6). FTE ratios for nurses, for example, ranged from .14 to .48 per AIDS nursing home patient, far below those in most hospitals.

Home Health, Hospice, and Alternative HIV Services

Home health care is integral to the continuum of care for HIV patients. HIV home health services have grown in volume and become more specialized in the dozen years of the epidemic. Models of HIV home care vary by agency type and geographic area. Services include patient assessment, skilled nursing care (such as infusions and aerosolized pentamidine treatments), personal care services, mental health/counseling, and case management. Most agencies reporting funding sources for these services include both Medicaid and private sources of payment.

Home health agencies are staffed largely with nurses (generally registered nurses), therapists, social workers, and aides. Few have physicians on staff, but they may have referral relationships with specific medical providers. Use of staff varies dramatically among agencies that

Table 6
FTE Staff to Patient Ratios in Nursing Homes Providing HIV/AIDS Care According to Category of Health Personnel, 1992

	AVERAGE	RANGE
NURSES	0.29	0.14 – 0.48
THERAPISTS	0.03	0.02 – 0.07
SOCIAL WORKERS	0.06	0.02 – 0.15
AIDES & ASSISTANTS	0.41	0.13 – 0.58

Staff/Patient Ratios

provide HIV care. In a study of 17 agencies in 11 states, the average length of time services were provided to patients ranged from 4 to 104 weeks, and nurse visit frequencies ranged from one to six a week per HIV patient. Among those providing social work services, the average numbers of visits ranged from .1 to .5 a week per patient. Visits lengths and service intensities varied dramatically among health occupations and agency types.

Most home health agencies that provide HIV services both receive referrals from and assist in coordination of community care for HIV patients. According to a study conducted for HRSA's Bureau of Health Resources Development, professional nurses often fill the role of case manager.¹⁷ Social workers, physicians, and others, however, also provide this function. Some home health agencies work in conjunction with other providers to offer adult day care, respite care, and personal care services in outpatient settings. HIV home health care is also being developed by long-term care hospitals, often on a contractual basis with Visiting Nurse Associations.

Hospices, both in-home and institutional models, provide services to patients in the end-stages of AIDS-related illnesses. Many HIV patients are unwilling to embrace the hospice concept of reduced medical treatment, however, due to the unpredictability of HIV illnesses. In some cases newer "high-tech" AIDS hospices have been developed that continue aggressive therapy. Many of these are still experimental in nature.

Health Personnel Providing Services for the HIV Epidemic

Virtually all types of health professionals address the many aspects of the epidemic. Beyond providing care to HIV patients, health personnel conduct HIV/AIDS research, develop and implement health education programs, develop and evaluate treatment protocols, and provide HIV counseling to the general public.

Nursing services are the dominant care provided to HIV patients. Nurses function as educators, counselors, discharge planners, and case managers for HIV patients, and treat persons at high risk for HIV-infection in sexually transmitted disease clinics, substance abuse programs, and public health centers. All nurses, therefore, need HIV education and training along with information on safeguards that should be taken in providing care to persons whose HIV-status is unknown. Research to improve nursing service effectiveness and efficiency in treating HIV also is needed.

An estimated 15 million physician visits occur annually for HIV counseling, testing, treatment and related services.¹⁸ Specialty HIV care encompasses virtually all physician services.

Dental personnel are often the first health professionals to note HIV-related infections. In a 1990 National Institute on Dental Research survey, however, only 60 percent of dentists expressed a willingness to treat HIV patients.¹⁹ Training programs are needed to enhance the capabilities and the willingness of dental personnel to detect and treat HIV-related infections and make appropriate referrals for medical care. Training should emphasize infection control for all patient encounters.

Allied health personnel play a major role in providing HIV care, especially in hospitals and home health agencies. Physical and occupational therapists help to maintain as much independence as possible for HIV patients. Dietitians and nutritionists are essential in sustaining patients' physical conditions. Respiratory therapists administer aerosolized treatments for TB and pneumocystis carini pneumonia. Other allied health personnel directly involved in HIV treatment and care include speech-language and hearing pathologists, medical technologists, clinical laboratory personnel, and emergency medical, radiologic service, and medical records technicians.

Psychiatrists, clinical psychologists, clinical social workers, and psychiatric nurses, provide counseling, support services, treatment, and health education for persons with HIV, their friends and families, and the general public. Mental health practitioners involved with substance abuse treatment and counseling programs, and those who work in sexually transmitted disease clinics, community mental health centers, and community health clinics are in the forefront of efforts to stem the spread of HIV. There is a special need for increased HIV education among providers responsible for reaching out to segments of the population at risk of exposure to HIV.

Health educators, biostatisticians, epidemiologists, and occupational health and safety personnel, and other public health personnel are involved in many aspects of HIV care. Health education and promotion programs are the most effective measures in preventing the spread of the epidemic. Increasingly, responsibility for treatment, research, and administration of HIV care is falling to public health agencies. Those employed in public health agencies need to be more fully prepared to provide effective services and relevant education to health professionals and the public regarding the HIV/AIDS epidemic.

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Physicians

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Approximately 597,400 active allopathic physicians were practicing in the United States in 1992. Of these, 441,624, or 74 percent, provided patient care. However, only 33 percent of these patient care physicians were primary care physicians, as defined by the Bureau of Health Professions as family and general medicine, general internal medicine, and general pediatrics (see the section on primary care for a more detailed definition). In addition to allopathic physicians, some 32,489 osteopathic physicians were active in 1993, 46 percent of whom were primary care practitioners.

Increases in the number of physicians over the last decade have outpaced population growth. In 1992, the allopathic physician-to-population ratio reached an all-time high of 255 per 100,000, 26 percent higher than in 1980. This ratio is expected to continue increasing into the next century as the supply of physicians grows faster than the population. The increase in physician supply results from growth in both the number of graduates of U.S.

medical schools as well as that of international medical graduates (IMGs) who enter this country during their residency training years.

In 1992, applicants and enrollments in allopathic and osteopathic medical schools continued to increase.

Without substantial changes in the medical education system, enrollment in medical schools is expected to continue increasing, despite the apparently adequate if not excessive supply of physicians. This is particularly true for osteopathy with the opening of another osteopathic medical school scheduled for 1994.

Figure 5

Supply of Active Physicians (MD & DO) and Ratio to Population

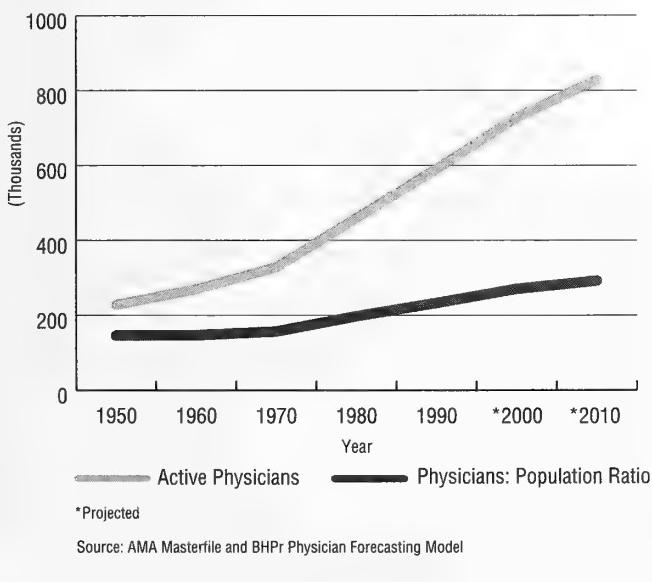
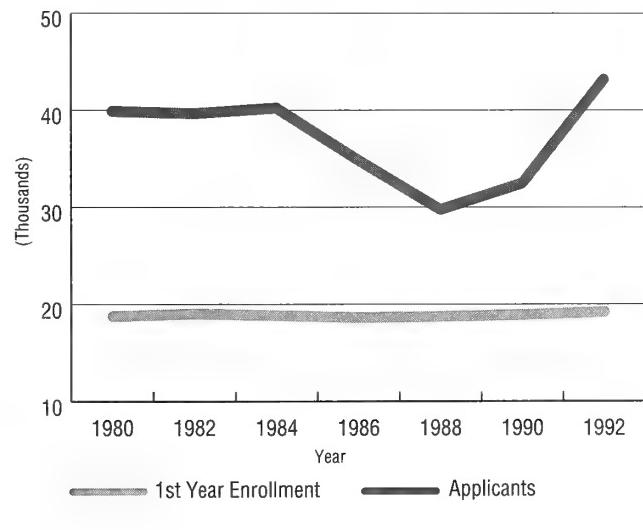


Figure 6

Applicants and 1st Year Enrollments in Schools of Medicine and Osteopathy



Upon graduation from medical school, new physicians enter residency programs lasting from 1 to 8 years. These programs prepare them to practice in one of the 26 medical specialties accredited by the American College of Graduate Medical Education. Graduates increasingly have chosen non-primary care specialties as a result of the high-tech environment in which medical education generally takes place and the lifestyle and financial incentives that reward the procedure-oriented specialties. As a result, the proportion of 1992 medical school graduates interested in pursuing primary care training had declined to 14.6 percent.

Concomitant with the increasing number of students pursuing medical careers has been an increasing number of residency positions. According to the Association of American Medical Colleges (AAMC) and the American Osteopathic Association (AOA), there were an estimated 102,670 allopathic and osteopathic residents and interns in 1992. These positions not only prepare United States Medical Graduates (USMGs) to enter independent practice, they are also the vehicle by which many International Medical Graduates (IMGs) first enter the United States and become exposed to the U.S. medical system. In 1991, approximately 6,000 IMGs in residency positions were neither citizens or permanent residents. Historical data shows that 33 percent of IMG medical residents in the United States eventually became permanent residents.¹ Of the 597,400 physicians practicing in the Nation in 1992, 22.7 percent, or 135,580 were IMGs.

Issues

While an examination of the absolute numbers and trends in physician supply and specialization patterns is informative, it is essential to examine the implications of these trends for the cost, access to, and quality of the Nation's health care.

As discussed earlier, the supply of physicians and the physician-to-population ratio has increased dramatically over the past decade. Initially the expansion of the physician supply was viewed positively as a means of increasing both the minority representation within the physician workforce, and the access to care for underserved populations. In fact this has been the case with respect to the number of women physicians in allopathic and osteopathic medicine; their numbers increased 34 percent and 135 percent respectively between 1981 and 1990. Other minorities have had less success. The percent of black physicians dropped from 3.1 to 3.0 percent of all physicians over the same years, while the proportion of Hispanic physicians increased negligibly from 4.4 to 4.5 percent.²

Furthermore, the increases in the supply of minority physicians have led to only modest improvements in access to care. One reason for this may be their tendency to enter non-primary care specialties. Such specialists generally locate in the more affluent suburban and metropolitan areas rather than underserved ones in order to have the population base needed to support their practices. Thus, while physician representation among some minorities has increased, there has not been an adequate dispersal into rural and underserved areas. This is reflected in data from the Bureau of Primary Health Care which shows the number of primary medical care shortage areas increasing from 1,242 in 1978 to 2,143 in 1991, while the population within these shortage areas also climbed from the 27 million in 1978 to 36 million in 1991.

Physician specialty distribution patterns have not only limited the access to care, but also may have contributed to higher levels of health care expenditures. An increased number of doctors has been linked to the over-doctoring of

patients in a phenomenon known as supply-induced demand. Although only about one-fifth of health expenditures are paid directly to physicians, their impact on health expenditures goes beyond their billable services, and includes costs resulting from consultations, tests and ancillary services, hospitalization of patients and written prescriptions. Seventy to 90 percent of health care expenditures are estimated to be initiated by physicians.¹³ Furthermore, specialists, because of their training, appear to have a greater tendency to order costly tests and perform procedures than do their primary care counterparts.

This tendency to order more tests is developed during specialty training which takes place in tertiary medical centers. There the resident is often exposed to patients with severe problems in more developed stages, which often leads the specialty physician to overestimate the likelihood of serious disease in unscreened populations. Therefore, they have a greater tendency to order costly diagnostic tests and perform technical procedures at a higher rate than primary care physicians. In addition, specialist services, even when identical to primary care practitioner services, often are more costly than their primary care counterparts. According to the American Medical Association, the mean fee for a family or general practice office visit with an established patient in 1990 was \$31.24 compared to \$39.87 for all physicians.¹⁴

Concerns over the impact of the size, distribution, and composition of the physician supply on access, cost, and quality of care led the Council on Graduate Medical Education (COGME) to identify seven specific physician workforce reform goals that could help to improve access, control costs and improve the quality of health care services.¹ One of the goals was to maintain the allopathic and osteopathic physician-to-population ratios at current levels. In addition, the Council recommended that the

United States move toward a system in which 50 percent of the physicians practice in the generalist disciplines of family practice, general internal medicine, and general pediatrics. This goal is aimed at reversing the current trend of specialization, which, if left unchanged, will lead to continued increases in the number and percent of specialists through the year 2000 and beyond.

The Council's hope is that by holding the physician-to-population ratio at the current level while increasing the proportion of primary care physicians, greater access and lower costs will result. Not only do primary care physicians have a greater tendency to locate and serve underserved populations, they also tend to provide care in a more comprehensive, appropriate, and cost-effective manner.

The cost of medical care depends not only on the type of physician providing the service but also the setting in which it is provided. Increasingly, society is focusing on the use of managed care as a method of controlling health care costs. If such a system grows, requirements for primary care personnel and primary care physicians are likely to increase. If the availability of primary care physicians is limited or inadequate, employers may then utilize physician extenders and physicians trained in specialty rather than primary care. Currently, some managed care arrangements have reported difficulties in recruiting properly trained primary care physicians—a trend that is likely to worsen if the movement toward specialization continues.

The impact of current supply trends is of particular concern in light of trends to base more health care delivery on the managed care model. Assuming two-thirds of the population is enrolled in managed care plans and physician specialization patterns remain unchanged, then requirements for patient care physicians overall would lag behind the supply. As a result there would be an overall surplus of physicians by the year 2000, but a significant shortage of physicians trained in primary care. This

¹The Council on Graduate Medical Education is a body of 17 people from government, academia and the private sector charged with providing advice and making recommendations to the Secretary of Health and Human Services and Congress on physician labor force issues.)

situation would worsen by the year 2020 barring any changes in the health care or medical education systems. If changes were to occur, however, and the percent of medical graduates entering primary care were to increase to 50 percent, the overall requirements for and supply of physicians in both the primary care and specialty fields would be adequate, if not in oversupply, by the year 2020.^{5/6}

If significant changes do not occur, requirements for primary care physicians may exceed their supply. In this event, physician extenders such as nurse practitioners, nurse-midwives, and physician assistants, along with underutilized physician specialists, may be enlisted to provide primary care services. The use of specialists in the provision of primary care, however, is problematic. While the evidence suggests that some specialists currently provide primary care, the interests and skills needed to provide such services differ from those required to deliver specialist care. Physicians who practice primary care must tolerate ambiguity because many problems never reach the stage of a diagnosis that can be coded using standard diagnostic nomenclature. They must be comfortable in establishing and maintaining relationships with patients. They must also be able to manage several related or unrelated problems at once. Over time, the problems of patients change and specialists, once appropriate for an initial problem, may be challenged beyond their skills and interests. While medical progress and new technologies provide the impetus for an increasingly specialist orientation; the same phenomena also calls for increasingly well-honed generalist skills.

To change the future character of the physician workforce, changes in the educational environment are necessary. Because of the influence that training institutions have on medical students' and residents' specialty choice, COGME recommended that undergraduate and graduate medical education emphasize meeting regional and national physician workforce needs.

Those needs encompass a number of issues in addition to the promotion of primary care. Among them is the goal of moving toward a physician labor force in which the racial/ethnic composition of the physician population more adequately reflects the overall population's diversity. It is felt that only through the diversification and education of the physician work force can additional barriers to care be removed, and access to quality care improved.

Only through improvements in cultural sensitivity and competence of medical providers can language and cultural barriers to preventive and curative care be broken down. Understanding the setting in which the disadvantaged live, the environment with which they must contend, and the cultural attitudes which impact their behavior is essential to providing effective care. A physician may need to explain antibiotic treatment for strep throat to a patient who has traditionally used honey as a cure. Similarly, family planning counseling must include recognition of traditional, social and environmental factors shaping patient attitudes if it is to be effective.

One way to increase physician awareness and ability to deal with different cultures and communities is to cultivate a sense of cultural sensitivity among all physicians and to heighten physician awareness to the specific needs of the various population groups. Training in cultural sensitivity for all practitioners is needed since practitioners seldom treat individuals exclusively of their own race or ethnicity, nor does being of the same race or ethnicity automatically make a practitioner culturally competent. Nonminority

practitioners should receive cultural sensitivity training because of the likelihood of a continued scarcity of minority health care providers. Finally, efforts to increase the representation of minority groups in the physician workforce should continue. Currently only 10 percent of medical students and 7 percent of practicing physicians are black, Hispanic or Native American, while these groups comprise 22 percent of the U.S. population.

The United States spends a larger proportion of its gross domestic product on health care than any other western nation. Despite this high level of expenditure, problems of inequitable, inappropriate, and inefficient care continue to exist. As a result, efforts are now underway to reform the health care system to enhance access, control costs and insure quality. Such changes will surely impact the physician workforce both in terms of the demand for specific specialties and the context of health care delivery.

The key to meeting these goals is the establishment and implementation of a plan which will outline the Nation's needs while altering the educational infrastructure and financial reimbursement strategies required to help attain national workforce goals.⁷ Such a plan may include changes in undergraduate curricula and the types of residencies offered or how they are financed. It may also include increasing financial incentives to primary care practitioners, particularly those serving in shortage areas, thereby reducing the income gap between primary care and specialty physicians.

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Physician Assistants

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The physician assistant (PA) profession in the United States is now more than 25 years old. The first two-year PA training program was established at Duke University in 1965 and graduated its first students in 1967. By the 1992-93 academic year, there were 59 accredited PA programs with a total enrollment of 3,832 men and women.¹ Through June 1993, a cumulative total of 27,000 persons had received formal PA training in the United States and 23,300 were currently in practice.²

Physician assistants are skilled members of the health care team who work with physicians to provide many types of primary and specialty services to all segments of the population. Recognized by law or regulation in 49 States (except Mississippi) as well as in the District of Columbia, PAs are authorized to diagnose illness, order and interpret lab tests, establish and carry out treatment plans, give physical exams, suture wounds, assist in surgery, and provide preventive health care counseling under varying levels of direct and indirect physician supervision. In 34 States as well as D.C., physicians can delegate to PAs under their supervision the authority to prescribe varying levels of medications. Restrictions and limitations on PA prescriptive authority are often the responsibility of the State medical boards. Most boards have placed limitations on controlled substances, while some restrict PAs to prescribing specific medications from approved formularies. The absence of or limitations to prescriptive authority is an important barrier cited by those proposing the expansion of PA practice.³ (See also the chapter on barriers to PA practice in this report.)

Physician assistants are more likely than are physicians to practice in rural and medically underserved areas. Slightly more than 17 percent of PAs nationwide were employed in areas with populations of less than 10,000 in 1993. This proportion is up from about 13 percent in 1989, but short of the 18 to 20 percent levels employed in these types of small communities in the late 1970's. Still, about 34 percent of PAs worked in communities of less than 50,000 in 1993.

Men represented about 58 percent of practicing PAs in 1993. The proportion of men in the profession has fallen consistently over the past 10 years; women have comprised more than half of all new PA graduates in each of these years.⁴ About 91 percent of full-time PAs in 1993 were white, nearly 4 percent were black, 3 percent were of Hispanic origin, and slightly fewer than 3 percent were Asian/Pacific Islanders, American Indians, or Alaskan natives.

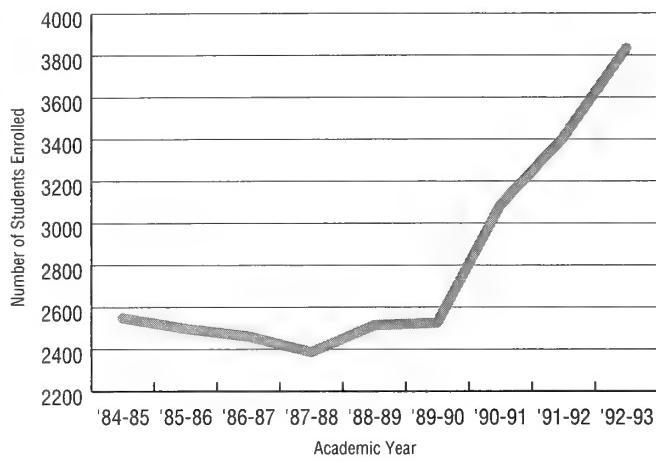
Starting salaries of new PA graduates were about \$35-40,000, while mean salaries of practicing PAs ranged from \$45-50,000 in 1992. Eighty-one percent of PAs worked in the private sector in 1992, while about 12 percent worked for the Federal government (including 3.2 percent in the Veterans Administration, 6 percent in the armed forces, and 0.8 percent in the Public Health Service). Seven percent of practicing PAs were employed by State and local governments.

Supply Trends

The total number of practicing PAs has grown rapidly in recent years. This has been especially true in the last half-decade, and indications are that this growth may accelerate in the near future. Admissions to and graduates from PA training programs have risen, as has the total number of such programs. In 1984-85, the 39 mostly 2-year PA training programs averaged 47 students a program, for a total of 1,833 students. During 1992-93, average enrollment was 65 among the 59 accredited programs for a total enrollment of 3,835.

Figure 7

Total Enrollments in PA Training Programs 1984-1993



Source: Association of Physician Assistant Programs

Shifts have occurred in the distribution of PAs by practice setting over the past two-and-a-half decades. Whereas in 1974 about one-seventh of practicing PAs were employed in hospitals, by the mid-1980s this proportion had grown to a little over one-third. Since 1981, the proportion of PAs who are hospital-based has declined slightly. Although the number of PAs employed in hospitals continued to rise, the proportion of hospital-based PAs stabilized at less than 30 percent between 1990 and 1993, in both inpatient and outpatient settings. The percent of PAs employed in all inpatient settings (i.e., hospitals and nursing homes), varies widely by State. According to the American Academy of Physician Assistants 1993 annual survey, 52 percent of non-Federally employed PAs in Connecticut were working in inpatient settings. In contrast, only 9 percent of non-Federal PAs practicing in California were employed in inpatient settings.⁵

Slight increases, meanwhile, have occurred recently in the proportions employed in group practice and clinic settings.

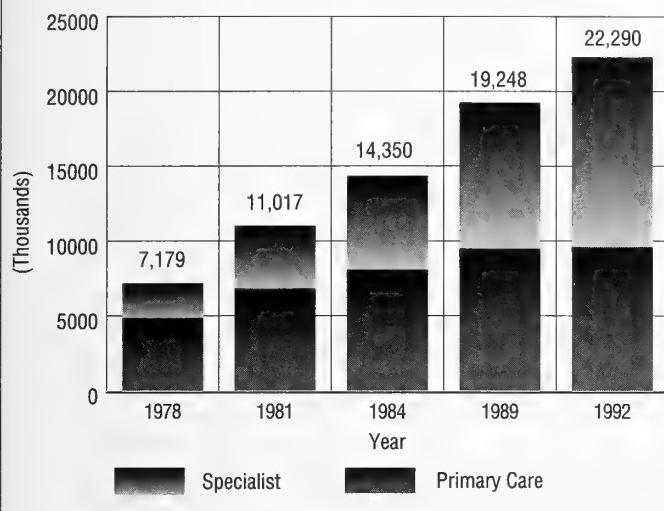
About 22 percent of practicing PAs in 1992 worked in group practice settings in physicians' offices, while about 10 percent were in solo practice settings. Another 6 percent worked in outpatient clinics.

The specialty distributions of practicing PAs also has changed over the past decade and a half. The proportion of PAs employed in the primary care specialties of family or general internal medicine and general pediatrics fell between 1978 and 1991, from 67 to 43 percent. The largest decline came among the family medicine specialty, whose share of PAs declined from 52 to 31 percent over this period. Data from the last two annual censuses of the American Academy of Physician Assistants, however, show some stabilization in these trends. Overall, 44 percent of PAs designated family, general internal medicine, or general pediatrics as their specialties in 1993. Family medicine's share edged upward to 33 percent.

Specialties that showed increases in their proportions of all PAs between 1978 and 1992 include the combined surgical subspecialties (from 4 to 10 percent), orthopedics (from 4 to 8 percent), emergency medicine (from 5 to 8 percent), general surgery (from 6 to 8 percent), and occupational medicine (from 0 to 4 percent). Obstetrics/gynecology (at 2 and 3 percent) and internal medicine subspecialties (at 6 and 7 percent), meanwhile, showed little change over the same period. State practice acts and other regulatory measures appear to impact on PA specialty distribution. PAs in States that disallow authority to write prescriptions are more likely to be in non-primary care specialties.⁷

Figure 8

Practicing Physician Assistants in U.S. by Generalist/Specialty Distribution



Source: American Academy of Physician Assistants

Sixty-one percent of the PA programs in 1992 awarded a Bachelor's of Arts degree, 13 percent awarded a masters degree, and 26 percent awarded associate degrees or certificates in 1992. Annual numbers of graduates from accredited PA programs have increased in each of the past three years to an estimated 1,594 persons in 1992.

Total tuition costs for the 52 accredited PA and 3 surgical assistant programs in 1992 ranged from about \$2,300 for a 24-month in-state program to \$32-35,000 at a few 42-month private programs (out-of-state tuition at the State school was \$12,300). Forty of the 55 accredited PA programs in 1991 were supported, in part, by Title VII authorized grant funds, totaling \$5 million in 1991. These Title VII grants supported about 28 percent of the PA training program budgets on average in 1991, down from an average of 41 percent in 1985, according to the Association of Physician Assistant Programs.

Potential Impact of The Changing Health Care System

Several factors may increase the demand for PAs, as well as nurse practitioners, in various sectors of the health care system. In hospitals, for example, it has been suggested that residency slots in teaching hospitals be limited to 110 percent of annual graduates of U.S. allopathic medical schools. Such a policy could result in the elimination of 11,000 medical residents in U.S. hospitals. At least some of the services formerly provided by these residents would likely be provided by non-physician practitioners such as physician's assistants. Expanded cut-backs in the weekly hours of medical residents' work, as was mandated in New York State in 1989, could also add to the demand for PAs and other non-physician providers in the next few years.

Physician Assistant Education, Costs, and Funding

Most PA training programs are 2-years in length and based in medical schools or schools of allied health. A few are based in 2-year community colleges or 4-year liberal arts colleges. In 1992, about 56 percent of entering PA students had acquired a baccalaureate degree in another field prior to admission, another 17 percent had earned an associates degree, while 7 percent had a graduate degree. About 44 percent of first-year PA students were 30 years of age or older. On average, PA students had more than four and one-half years of health care work experience upon entrance to their program. Attrition from PA programs, meanwhile, has declined over the past 8 years, from 14 to 8.6 percent.

There are indications that demand for PAs in outpatient settings could rise dramatically as the proportion of the population in managed care programs increases. Several studies have shown that PAs (as well as nurse practitioners) can effectively manage between 60 to 80 percent of the primary care service needs of a population under certain managed-care arrangements. Factors that impact on the amount of substitution possible under these arrangements include physician specialty mix, patient mix, extent of professional collaboration, and workload scheduling. Cost factors are also expected to impact on an increased demand for physician assistants and other non-physician providers to provide primary care in these settings. Total compensation costs of full-time physician assistants was about half that of primary care physicians employed in managed care settings in 1992.

In response to the expected increased demand for PA services proposals have been made to increase the numbers of practicing PAs through increased support of physician assistant training programs. Although methods for achieving these increases vary, recommendations include a doubling of the annual numbers of PA graduates, to nearly 3,500, by the year 2000 and a doubling of the numbers of practicing physician assistants, to 47,000, by year 2005.

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Dentists

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The American Dental Association's (ADA) 1991 census estimated that there were 155,000 active dentists in 1991, a number that varied somewhat from the 162,000 estimated by the Bureau of Labor Statistics' Current Population Survey in 1992.¹ The Bureau of Labor Statistics projects the demand for new dentists will grow by about 12 percent between 1990 and 2005: slower than the 20 percent overall growth projected for all occupations.²

As the following graph shows, enrollments and graduates declined during much of the 1980's. The drop has been attributed to a number of factors including a decline in the college-aged population, increased educational costs, and a perceived oversupply characterized by an increasing practitioner-to-population ratio. More recently, however, enrollments have remained steady and showed a slight increase in the 1992-93 academic year. Future enrollment trends, however,

depend partly on whether any of the remaining dental schools close. Currently, there are 54 programs, down from the all time high of 60 that existed up to the 1985-86 school year. Many programs, especially private ones, have experienced financial problems in recent years and any additional closings will likely come from this group.

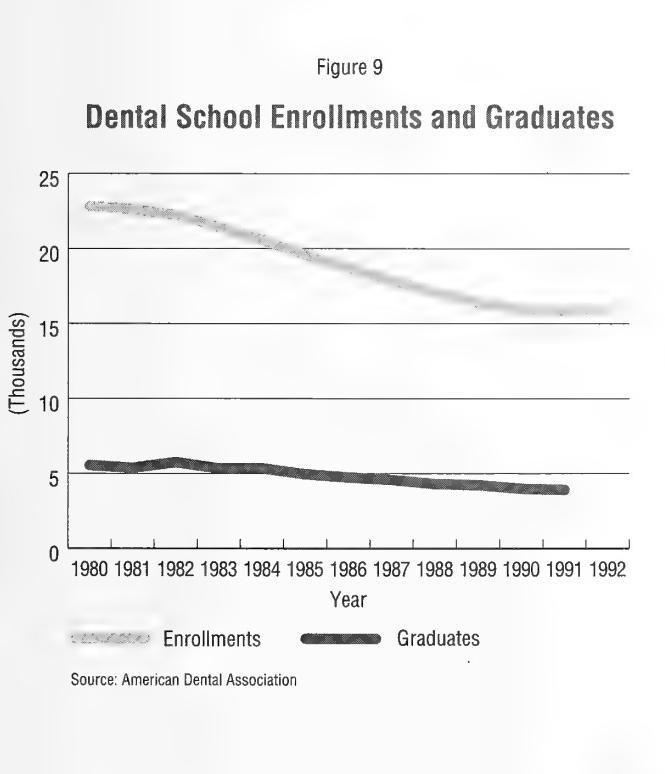
Changing Disease Patterns and Demographics

While the economic demand for dental care is apparently being met, the true need for services clearly is not. Those having the resources—out-of-pocket cash or insurance—have little problem receiving treatment; those lacking such resources often receive fewer services, which when provided are often only palliative. Assuming no change in the way current dental care is financed, several factors may tend to exacerbate the gap between those who receive care and those who do not.

1. Although the fluoridation of water has reduced the number of caries and fillings needing replacement, 75 percent of dental caries in children are concentrated in 25 percent of the population, with disease levels generally higher among the minorities.³

2. Minority populations, more likely to be uninsured and unable to afford dental care, are expected to grow between now and the year 2020, exacerbating the gap between true need and economic demand.⁹

3. The adult population is a growing proportion of the total population, and is at greater risk for gingivitis and adult-onset periodontitis which affect over half of the population between 18 and 64 years of age, and are major contributors to tooth loss.⁴



Issues

Despite improvements in the nation's overall dental health, a sizable proportion of the population lacks adequate dental care, and oral health problems, which often are not self-limiting, remain prevalent. For instance, 84 percent of children still experience tooth decay by the time they leave high school; 40 to 70 percent of adults have periodontal disease; and more than a third of those over 65 have no natural teeth.^{3/4/5} In addition, some 30,000 Americans are diagnosed with oral cancer each year and about 8,000 die—more than those claimed by cervical cancer.⁶ Helping to make possible these conditions is the fact that 40 percent of the population fails to receive any dental care each year, a situation made more unfortunate because many dental problems are easily avoided through simple preventive care. On the other hand, unlike many medical problems, they are not self-limiting; once they occur they tend to become worse over time.⁵

While dentistry lacks medicine's major problems of over-specialization and geographic shortages, it has the problem of being financially inaccessible. Currently, less than half of the population has private dental insurance, and Federal and State funds pay for less than 2 percent of all dental care.^{7/8} Medicare, for instance, does not pay for dental services for those over 65, an age when such services are becoming particularly important and individuals are less likely to have private insurance. The lack of insurance or out-of-pocket cash to pay for regular preventive services condemns many to wait too long and then only receive services in a hospital emergency room where the treatment often is only palliative and not curative.

Why is dentistry so inaccessible? Unlike other health care providers whose practices are closely intertwined with other practitioners, regulatory bodies, and community agencies, the dental profession has remained relatively autonomous.⁸ Dentistry's autonomy has fostered the impression that oral health care is more a discretionary service than an integral part of health care: a belief supported in part by the fact that the profession is less involved in Federal and State programs, such as Medicare or Medicaid, than other health professions. Public health professionals and other agents representing society are now attempting to reverse this professional and institutional inertia.

Interestingly, the infrastructure needed to expand the delivery of dental services already exists. One quarter of all health care establishments are dentists offices, and as of December 31, 1992, there were only 967 health professional shortage areas for dentists compared to over 2,271 for primary care physicians.^{9/10}

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Nurses

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Nursing constitutes the largest segment of those employed in health care. Nursing personnel are divided into three occupational groups: registered nurses(RNs), licensed practical/vocational nurses¹(LPN/VNs), and assistive nursing personnel.

Among the three occupational groups, registered nurses are the most numerous. Registered nurses are individuals who hold current licenses to practice within the scope of professional nursing in at least one jurisdiction of the United States. Their responsibilities in the health care system are wide-ranging. The majority are responsible for the provision of direct patient care in institutional, public or community health, home health, or ambulatory care settings. Advanced practice RNs also provide specialized or primary patient care to clients either as self-employed practitioners or as employees in organized health care delivery centers. Other RNs function as managers and directors of complex nursing care systems or as teachers of nursing to the variety of nursing groups. An estimated 1,853,024 registered nurses were employed in nursing positions in the United States in March 1992 according to the latest National Sample Survey of Registered Nurses.¹

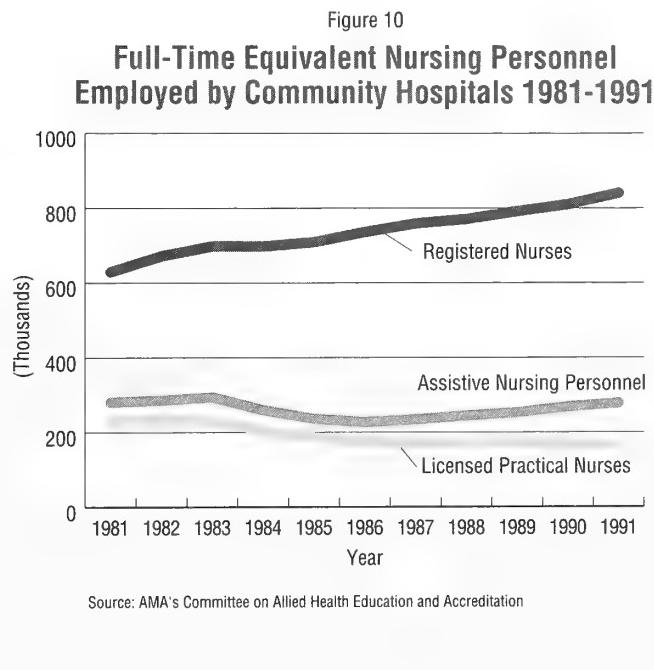
Licensed practical nurses are individuals who hold current licenses to practice within the scope of practical or vocational nursing in at least one jurisdiction of the United States. LPN/VNs function primarily as providers of direct patient care in institutionalized settings. The smallest of the three occupational groups in nursing, it is estimated that, as of December 31, 1991, there were 555,000 employed LPN/VNs in the United States.²

Assistive nursing personnel are unlicensed individuals who assist nursing staff in the provision of basic care to clients and who work under the supervision of licensed nursing personnel. Included in this occupational group are nurse aides, nursing assistants, orderlies, attendants, and

personal care and home health aides. While no overall single estimate of the number of individuals within this occupational group is available, based on data from a variety of sources, they probably number about 1-1.1 million individuals.³

Distribution within the Health Care System

Data on the use of nursing personnel in the health care arena have shown an increasing reliance on registered nurses in comparison to the other two occupational groups. Hospitals, which employ a substantial proportion of the personnel within each of the nursing occupational groups, have increased their employment of registered nurses while generally decreasing their employment of licensed practical nurses. Although in recent years there has been an increase in the number of assistive nursing personnel employed by hospitals, the number is still lower than it was in the early 1980s..

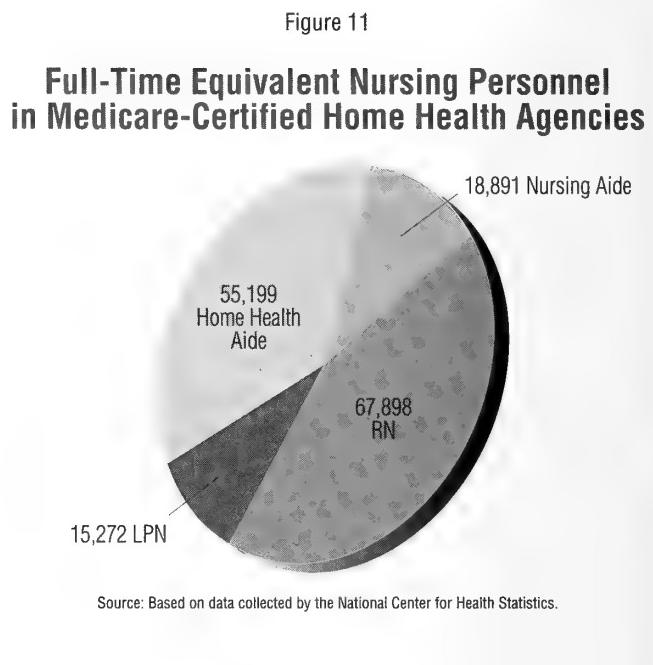


¹In two States, California and Texas, these nurses are called vocational nurses. In other jurisdictions, they are known as practical nurses. In the remaining parts of this section licensed practical/vocational nurses will be referred to as licensed practical nurses(LPNs).

Assistive nursing personnel are the predominant employees in nursing homes. However, although current data for all types of nursing personnel in nursing homes are not available at this time, recent regulatory requirements stemming from a concern about the quality of care in these facilities have probably led to an increase in the employment of licensed nursing personnel. The National Sample Survey of Registered Nurses indicates that, between 1988 and 1992, the number of registered nurses practicing in nursing homes increased 17 percent, proportionately more than the 14 percent increase shown in the number of all employed RNs regardless of practice setting. In contrast, between 1984 and 1988, the number of registered nurses in nursing homes decreased despite an increase in the overall supply of RNs.⁴

The increased use of registered nurses to provide health care also has been stimulated by expansion of noninstitutionalized care. Health care provided on an ambulatory basis, in physicians' offices or clinic settings, or in patients' homes is far more likely to be provided by registered nurses than by other nursing occupational groups. Based on the 1992 National Sample Survey of Registered Nurses, there was a substantial increase in the number of RNs working in public/community health settings. The number of RNs working in these settings increased about 30 percent between 1988 and 1992, compared to an increase of about 11 percent in hospitals. And, in hospitals, the number of RNs in outpatient departments increased about 68 percent compared to an increase of about 6 percent for nurses working in in-patient bed units. Among the various settings which constitute part of the public/community health area, the number of RNs in settings providing home health care almost doubled between 1988 and 1992.

In addition to registered nurses, home health agencies also employ home health aides in significant numbers. Data from the 1991 Provider Inventory from the National Center for Health Statistics show that, in Medicare-certified home health care agencies, there were about 157,000 full-time equivalent nursing personnel. Fifty-three percent of these were licensed nursing personnel, mostly



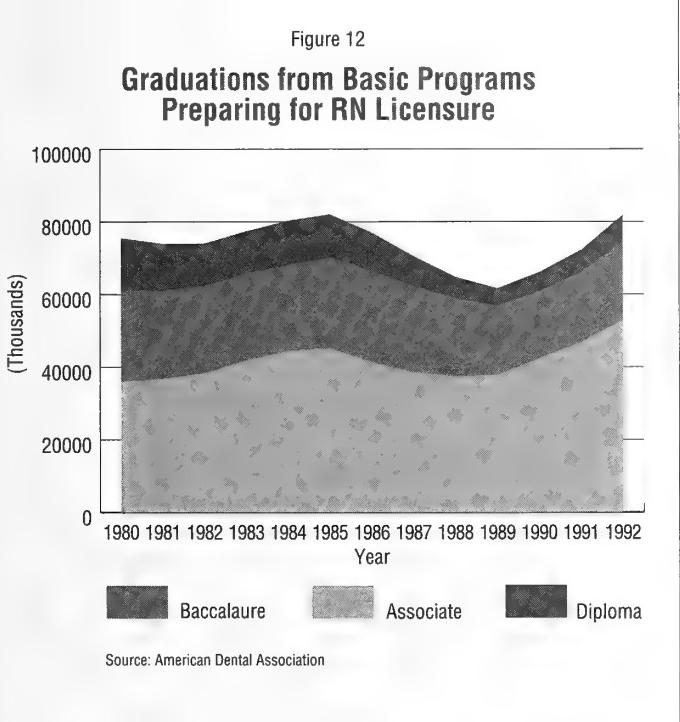
registered nurses. Forty-seven percent were assistive nursing personnel, mostly home health aides.⁵

Influences on the Current Supply of Registered Nurses

The last two reports to Congress pointed out the significant shortage in the supply of registered nurses to fill the demand for their services.^{6/7} More recent indicators suggest that for the present time the shortage might have eased. Data from the 1991 Hospital Nursing Personnel Survey indicate a decline in the national average RN vacancy rate from 11 percent in 1990 to 8.7 percent in 1991. That study also suggests that there was a shift in the hospitals' perception of RN shortages. For example, only 8 percent of the hospitals responding to the survey reported "severe" shortages compared to 16 percent in 1990. Substantial declines also were noted for hospitals indicating "moderate" shortages, from 51 percent of the respondents in 1990 to 35 percent in 1991. Further, the study showed some improvement in the time it took to fill RN positions.⁸

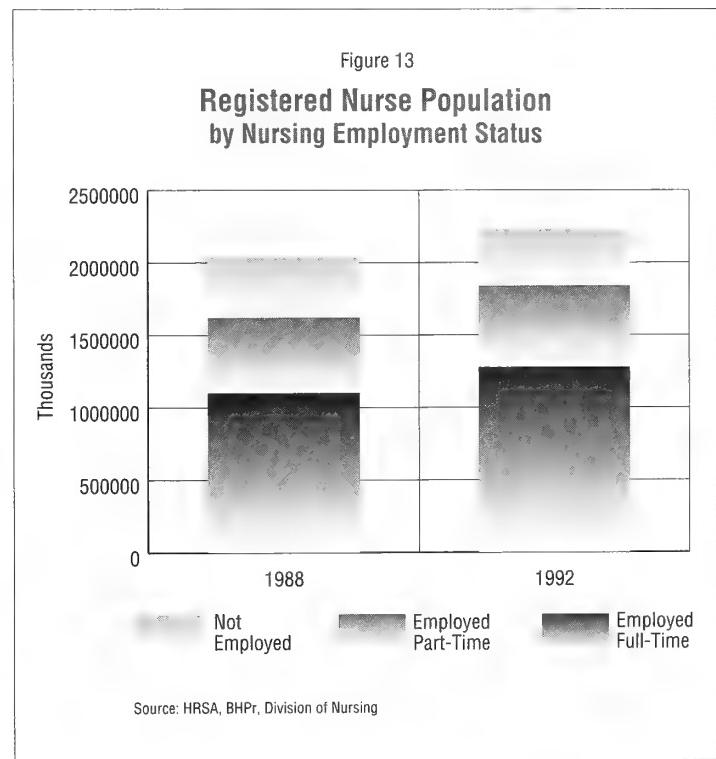
Data are not available to indicate whether there have been shifts in the vacancy rates for other employment settings. However, the increases noted in the number of RNs in nursing homes and the substantial growth in the number in home health agencies suggest that shortages in those areas may have eased as well.

A number of recent occurrences may have contributed to the decrease in the severity of the nursing shortage. While the total number of graduates from basic nursing education programs decreased significantly in the mid-eighties, that trend has been reversed. In the 1990-91 academic year, the number of graduates totalled 72,230, 9.3 percent more than the number in 1989-90.⁹ Preliminary, as yet unpublished data for 1991-92, show an even larger increase, about 13 percent, for a total of almost 82,000 graduates in that academic year.



The March 1992 National Sample Survey of Registered Nurses showed an increase in the proportion of those with licenses to practice as registered nurses who were employed in nursing. In 1992, almost 83 percent of the RNs were employed in nursing compared to 80 percent in 1988. The total RN population increased 10 percent, however, the number of employed RNs increased 14 percent, from 1,627,035 to 1,853,024. RNs were also more likely to be employed on a full-time rather than part-time basis.

The average salary of an RN employed in nursing on a full-time basis in March 1992 was \$37,738, 33 percent more than in March 1988. Between November 1984 and March 1988 the average salary of a full-time employed RN increased only 21 percent.



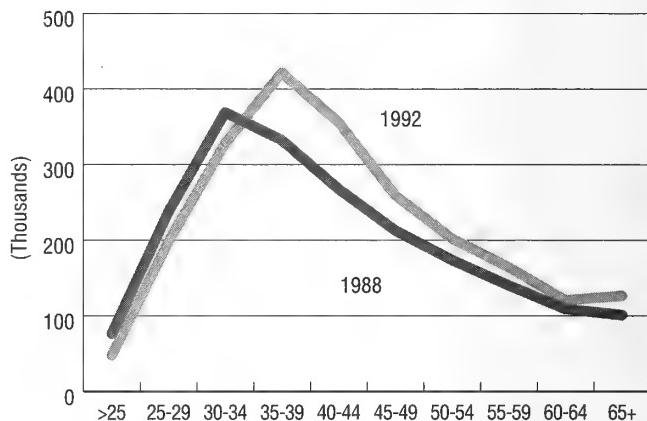
Outlook for the Future

The extent to which the current picture will be reflected in the future needs to be considered from a variety of perspectives. The projections of future graduates from basic nursing educational programs contained in the *Eighth Report to Congress* predicted decreases in the annual number of graduates in the future rather than increases. Those conclusions were drawn following a period of declining growth rates and a continuous five-year decrease in the number of annual graduations. When the more recent graduation numbers are taken into account a somewhat more optimistic picture for the future can be drawn, one which shows some gains over the years in the number of graduates rather than losses. However, there are many factors affecting the choices individuals might make about becoming nurses, many of which themselves are difficult to predict. These factors need to be considered when judging which scenario is more likely.

In any event, the number of new graduates available each year is only part of the picture of how many RNs will be available to provide for the health care needs of the population. To be taken into consideration as well is the number of those already in the workforce who will continue to be a part of that workforce. Increasing numbers of the new graduates come from the older segments of the population. The average age of the registered nurse population continues to rise. Continuing a trend noted in prior National Sample Surveys of Registered Nurses, there were 110,000 fewer registered nurses under the age of 35 in 1992 than there were in 1988, a 16 percent drop, despite the increase in the overall nurse population.

The *Eighth Report to Congress*, taking into account both the decreasing numbers of new graduates available each year along with the increasing age of the new graduates and of the total registered nurse population, forecast a decrease shortly after the turn of the century in the number of RNs available for the workforce. New projections of what the supply of registered nurses might be in the future, taking into account current graduation levels and the somewhat higher than anticipated

Figure 14
Age Distribution of Registered Nurse Population, March 1988 and 1992



Source: HRSA, Division of Nursing, BHPr

proportion of the registered nurse population that is part of the supply, might paint a less pessimistic picture than the earlier one. However, the increasing age level of RNs will continue to have the effect of diminishing the growth rate in the nurse supply, particularly in a climate of continuing and increasing demands.

Projections of the future demand for registered nurses, along with those for the other groups of nursing personnel, reported in the *Eighth Report to Congress*, show increasing future requirements. These projections also need to be reexamined in the light of more recent data on the distribution and use of nursing personnel within the various segments of the health care system, the restructuring of the health care system being carried out in the States and by private sector health care providers, and the provision of health care to those within the population currently without access because of lack of facilities or financial ability.

Conclusions

Factors such as the expansion of the availability of primary care, including the most cost-effective approaches to the delivery of such care; the expansion of the provision of care in nontraditional settings and less structured environments; improved technologies and care models leading to increased complexity; the aging of the population, and the emphasis on prevention and health promotion all play a role in the requirements for nursing personnel. These factors affect not only the numbers that might be required but also the qualitative aspects that might be desired of nursing personnel. While other areas of this report elaborate on this subject, it is important to include in this overview conclusions of the impact of the issues examined in those sections on the composition of the nurse workforce.

The section on the appropriate nurse workforce for current and future health care delivery notes that key to the provision of a nurse workforce adequately prepared to meet the future requirements is nursing education. Future visions of the health care system require registered nurses educated in the broad-based aspects of the delivery of care. Baccalaureate education is more likely to provide this perspective than is diploma or associate degree education. Yet almost two-thirds of the new entrants into nursing each year come from associate degree programs. Increasingly, nursing in its expanded advanced practice role is being looked to for the provision of cost-effective care to the underserved. Baccalaureate preparation is necessary as a foundation for the graduate level education for this expanded role.

In another section of this report, the issue of the barriers to practice of nurses in the advanced practice roles of nurse practitioner and nurse-midwife is discussed. As indicated there, such barriers affect the ability of these practitioners to increase access to quality care. As States and other entities continue moving toward changes in the health care system these practitioners take on increasing importance as a source of primary care to the population. Therefore, in addition to an education system that can produce a sufficient number of appropriately trained nurses, also important is the enabling of advanced practice nurses to function at their full scope.

Recommendations:

- Federal resources and program initiatives should be strategically targeted to assure the development of a nursing workforce prepared to meet the demands for services in a changing health care system.
- Federal efforts relating to nursing education should focus on assuring a nursing workforce appropriate for the changing health care model emphasizing community-based primary health care.
- Barriers to practice should be removed to enable health care workers, including nurses, to function in their full scope of practice.
- Development and monitoring of the nursing workforce should be supported by targeted national analytic efforts.

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Allied Health Introduction

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The Bureau of Health Professions defines the allied health professions as those requiring professional training at the post-secondary school level, excluding nurses, physicians, dentists and others trained to diagnose disease. Employment in these occupations, including, for example, physical, respiratory and occupational therapists, dietitians and medical records personnel, grew 42 percent from 1983 through 1992, from 1.5 to 2.1 million. The allied health growth rate was about two-and-a-half times that of total employment during the same time period.¹

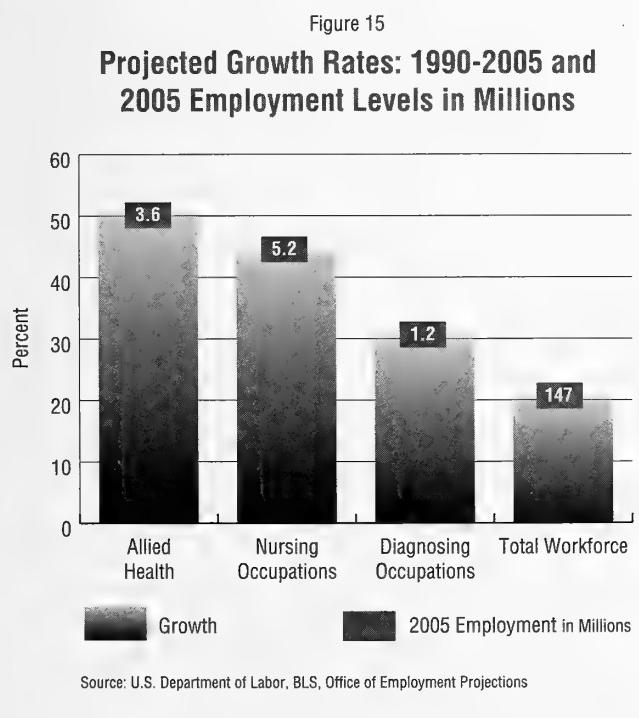
Further, the Bureau of Labor Statistics (BLS) projects employment among the health occupations to grow by 50 percent between 1990 and 2005, almost two-and-a-half times the 20 percent rate projected for all occupations and significantly higher than 29 percent rate projected for the group of professions comprising allopathic, osteopathic, and veterinary medicine, dentistry, optometry, and podiatry.² It is even higher than the rapidly growing field of nursing, where a 44 percent growth rate is forecast.

The projected rapid growth for allied health care workers is based largely on expectations that new technologies, new equipment, and a growing and aging population will continue to create additional demand for health care services and workers. It is expected that those advances, while they save lives and prevent disabilities, will leave many patients with extensive rehabilitative needs. Furthermore, as new diagnostic equipment becomes available, the demand for those who operate it will increase, as it did for CAT and MRI scan personnel. Probably the greatest contributor to demand, however, will be sheer population growth, particularly among the aged, who are more likely to have acute and chronic health problems.

Concerns common to the allied health fields include:

- **Shortages.** The requirements for many allied health occupations appears greater than the supply.
- **Scope of work.** Many occupations need to change or expand their scope of work to achieve cost-efficiencies and provide better access to care.
- **Educational requirements.** A trend toward increasing educational requirements prior to establishing the need or efficacy has resulted in concerns that unnecessary cost increases may result without improvements in care.
- **Technology.** New technology is expected to increase the demand for allied health in some areas by inventing new capabilities or services, while decreasing demand in other areas by making tasks simpler.

This section will examine these and other issues that may affect the allied health professions and their role in the Nation's health care system.



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Dental Hygienists

Dental hygienists are oral health professionals, licensed in dental hygiene who provide educational, preventive, and therapeutic oral health services. The Bureau of Labor Statistics (BLS) estimates that dental hygienists held about 74,000 jobs in 1992.¹ The BLS also projects a 41 percent increase in jobs for the occupation between 1990 and 2005, much higher than the average 20 percent growth projected for the nation as a whole.² The American Dental Hygienists Association estimates that approximately 78,000 of about 100,000 registered dental hygienists (RDH) were actively providing dental hygiene services in 1993. Only about 52 percent of RDHs work full-time as clinicians; many of the rest work part-time at more than one job. Currently, there appears to be no shortage of hygienists.

Issues

Dental hygienists are the only licensed professionals whose scope of practice and program accreditation is controlled by their employers—dentists. The appropriateness of this has been challenged in a number of States by legislative proposals that would establish separate State licensing boards for hygienists. In addition to developing separate State licensing boards, proposals have been advanced to ensure that course requirements for dental hygiene education programs are regularly updated to accurately reflect the needs and trends of society.

Presently, dental hygiene services are largely confined to private dental offices because of supervision requirements which differ from State to State and hinder hygienists' ability to disperse throughout the community and thereby improve access to oral health care. This is despite the fact that State specific licensing requirements for dental hygienists ensure that by granting a license,

dental hygienists have demonstrated to the State's satisfaction that, within their scope of practice, the public's health, safety, and welfare, will be ensured. In addition, dental hygienists, carry their own malpractice insurance. These educational and professional requirements suggest dental hygienists possess the ability to practice without supervision. In fact, over 40 States permit the dental hygienists to provide services under "general supervision", meaning the physical presence of a supervising dentist is not required.

A recent study found that dental hygienists in independent practice provided greater access to underserved areas, did so at less cost, and provided very high percentages of acceptable care, and that oral health care provided by dental hygienists compared favorably to the oral health care provided by a comparison group of dentists.³ A 1989 Institute of Medicine study reported "the opportunities for hygienist employment outside dental offices today are limited by regulations that require them to work on site with dentists. Thus, populations such as the elderly in long-term care facilities and physically and mentally retarded people in institutions, whose access to dental care is limited by their lack of mobility, cannot be served by hygienists alone."⁴ Further, a report of the Federal Trade Commission found that increased use of dental hygiene services would decrease costs to the consumer and improve access, without compromising quality.⁵

For its part, the ADA has opposed self-regulatory proposals arguing that it would lead to independent practice and that "unsupervised or independent practice by dental hygienists reduces the quality of oral health care and seriously increases risks to the patient."⁶ These claims, however, appear unsupported by any data.

For the professions, the controversy over self-regulation is largely one of autonomy and control. For the public, it is whether self-regulation would assure the provision of quality dental hygiene services while increasing access and reducing costs.

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Physical Therapists

Physical therapists held about 88,000 in 1990. This number is projected to grow to about 155,000 in 2005, a 76 percent increase that would make it one of the fastest-growing occupations in the country.¹ Factors contributing to both recent and future demand for PTs include new technologies that save lives but leave people in need of rehabilitation, and therapeutic advances that allow treatment of a wider range of conditions. Also contributing to demand is the rapidly growing population of those over 65 who suffer disproportionately from chronic conditions. Contributing to future demand will be the pool of aging baby boomers becoming more susceptible to disease and disability.

Issues

The most important issue related to PTs and the health of the nation is one of supply and demand. There is evidence that a significant shortage exists despite continued growth in both programs and graduates. Indicators of increased demand include:

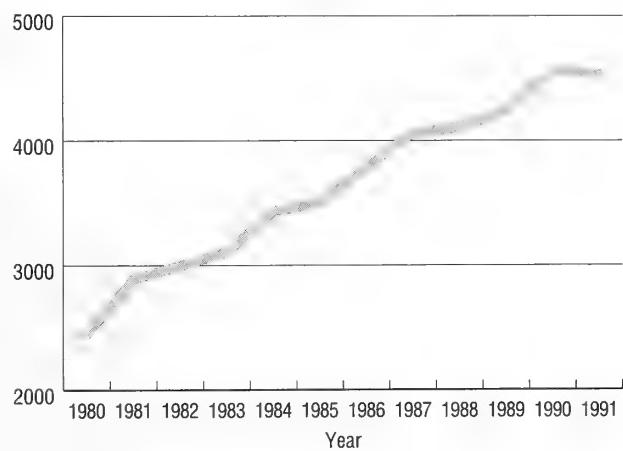
- The AHA's finding that PTs had the highest FTE vacancy rate of any occupation in 1991 (16.6 percent).² Currently, hospitals employ about one-third of all PTs.
- Rapid salary increases. According to Current Population Survey data from the Bureau of Labor Statistics (BLS), the median weekly earnings of PTs who worked full time increased 57 percent between 1984 and 1991, compared to a 32 percent increase for all occupations.³
- A 33 percent growth in educational programs, from 107 in 1984 to 136 in 1992, and the development of 22 new programs. This is rapid growth compared to almost no growth in the overall number of accredited allied health programs over the same period.⁴

While a quick reduction in the shortage is not likely, there are indications that the disparity between supply and demand will narrow, particularly given the number of new training programs.⁵ However, much of any increase in supply will go toward replacing those who leave the profession to retire or to seek another type of employment. Using BLS separation data for "All Therapists" as a proxy

for physical therapists, roughly one third (29,300) of physical therapists will have left the occupation by 2005.⁶ Thus, roughly one-third or six-and-a-half years worth of graduates (at the 1990-91 level of 4,500 a year) will go to replace those who leave. The rest will fill long-standing vacancies and new jobs.

Assuming the annual number of graduates remains constant at the 1990-91 level and that one-third of the 1990 supply needs replacement by 2005, then rough calculations show that the supply of PTs would fall short of BLS's projected demand of 155,000 in 2005. The addition of new programs is therefore encouraging and should add considerably to the previous growth in PT graduates. While the development of new educational programs is encouraging, the programs face shortages of qualified faculty, inadequate physical space, and tight fiscal constraints in many universities.

Figure 16
**Graduates of PT Programs
1981-1991**



Source: American Physical Therapy Association
1982 and 1986 data is interpolated

A number of issues could affect PT supply and demand. Demand could increase if more States allow PTs to diagnose and treat without a physician referral. On the other hand the excess demand for PT has resulted in greater utilization of PT assistants as PT "extenders", although some large insurance companies do not reimburse for PT assistant services. The extent this has limited the role of PT assistants and affected their ability to provide services is not well understood.

An issue that could affect whether existing demand is met is a 1984 Medicare regulation limiting the rate at which PTs who work as independent contractors can increase their charges. The rate has not been updated, and Medicare payments now lag behind those paid by private payers. As a result, fewer PT contractors are willing to work in facilities that are heavily reliant on Medicare, such as nursing homes, which may find it hard to comply with laws mandating the provision of therapy services.

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Occupational Therapists

Jobs for occupational therapists (OTs) are expected to increase from 36,000 in 1990 to 56,000 in 2005, a growth rate of 55 percent, making it one of the 20 fastest growing occupations in the economy.¹

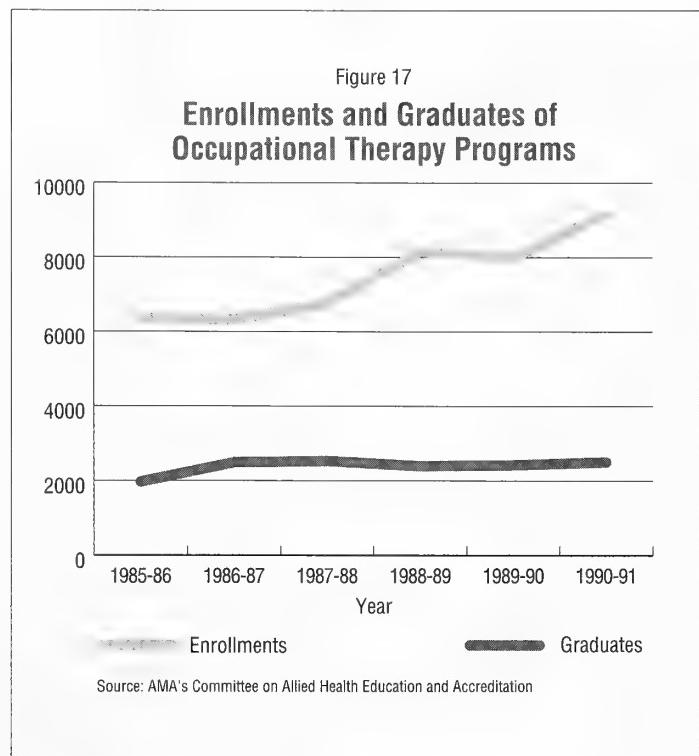
Issues

The primary issue facing OTs is that demand for their services appears to exceed the available supply. Indicators that help put the supply and demand situation into perspective include the following:

- An AHA survey showing a FTE hospital vacancy rate of 14.2 percent in 1991; a rate second only to that of physical therapists.² Hospitals employed 40 percent of OTs in 1990.³
- The median weekly earnings of OTs who usually worked full-time increased 71 percent between 1984 and 1991, faster than the 32 percent growth for all occupations.⁴
- A 32 percent growth in the number of educational programs, from 56 in 1983-84 to 74 in 1990-91. This is rapid growth compared to almost no growth for the sum of all accredited allied health programs, and indicates a response by schools to increasing demand from employers.⁵ Also, 16 programs were in development in 1993.

As the following graph illustrates, the annual number of graduates increased 27 percent between 1985-86 and 1990-91. During the same time, enrollments grew 47 percent, with much of the increase occurring in the three most recent years. This suggests that the annual number of graduates, which has remained relatively constant at about 2,500, should start to increase significantly in the next few years.

A significant proportion of any new graduating class, however, goes to replacing those who permanently leave the occupation. Using BLS data for "All Therapists" as a proxy for OTs, roughly one-third of OTs practicing in 1990 (about 12,000) will have permanently left the occupation by 2005.⁶ Thus, almost 5 years worth of graduates (at the 1990-91 level of 2,500 a year) will go to replace those who



leave the occupation between 1990 and 2005. The rest will go to eliminate existing vacancies and fill new jobs. Assuming the annual number of graduates remains constant at the 1990-91 level and that one third of the 1990 supply needs replacement by 2005, then rough calculations show that the supply will exceed BLS's 2005 projection of 56,000 jobs. Such calculations are just estimates, however, and serve more as an indicator of whether the gap between supply and demand is currently narrowing than an accurate estimate of what will occur. While the gap would appear to be narrowing, it is encouraging that the number of graduates will increase soon and that an 16 additional programs are in development, although finding an adequate supply of faculty has been a problem, according to AOTA.

A number of issues could affect demand for OTs. Demand would increase, for instance, if Medicare begins reimbursing OTs directly for home health services. Demand also would increase if more States allow OTs to treat without a physician's referral.

Passage of the Americans with Disabilities Act (PL 101-336) could also result in increased demand as businesses turn to OTs for help in devising ways to accommodate the disabled. On the other hand, demand for OT services in nursing homes could decline if efforts to weaken the National Nursing Home Reform act succeed. The Act currently calls for as much restraint-free care as possible. This requires evaluation by an OT to identify and help maintain an individual's capabilities. If the Act were weakened or massive exemptions were made, greater use of restraints would again be allowed resulting in less need of OT services.

An issue that may not affect demand, but may affect whether the demand is met is a 1984 Medicare regulation limiting the rate at which OTs working as independent contractors can increase their rates. Because the rate has never been increased, Medicare reimbursement to OT-contractors has apparently lagged behind that of other insurers. As a result, OT-contractors may tend to favor facilities not heavily reliant on Medicare. Nursing homes, which often use contractors to provide legislatively mandated services, may suffer the most from this regulation where Medicare is often a major source of funding.

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Speech-Language Pathologists and Audiologists

Although they are separate and distinct occupations, speech-language pathologists and audiologists are closely related in that they both address communications disorders. As a result, data for the two often are combined. The Bureau of Labor Statistics' (BLS) Current Population Survey (CPS) estimates that 79,000 individuals were employed in these two occupations in 1992.¹ At the same time, the American Speech-Language, Hearing Association (ASHA) had a membership of 65,660, the overwhelming majority of whom held a master's degree or above. ASHA also estimated that when including nonmembers, essentially those with only a baccalaureate, the total supply of these occupations approached 131,300.

The BLS expects the two occupations combined to grow 34 percent between 1990 and 2005, faster than the 20 percent growth projected for all occupations. The mini-baby boom should contribute to demand for speech pathologists because roughly 70 percent of this occupation's caseload is younger than 18. Driving demand for audiologists will be the growing number of elderly, especially those over 75, who suffer from hearing problems.²

Issues

Three issues face the speech and hearing professions. The first is whether the economic demand for these occupations exceeds supply. Evidence supporting an excess of demand includes an increase in the hospital vacancy rate for speech pathologists from 9.9 percent in 1989 to 11.1 percent in 1991 (vacancy rates for audiologists were not collected).³ In addition, ASHA recorded vacancy rates in schools of between 7 and 8 percent. Prior to this, there were enrollment declines in both speech and hearing programs during much of the 1980's. Meanwhile demand for full-time-equivalent employment in hospitals increased 56 percent between 1983 and 1990.⁴ Enrollments have since turned around, however, and higher-than-average salary growth suggests that market forces are working to increase supply.

In addition, there also is a question of whether the actual need for services is being adequately converted into economic demand. One study has shown that while 20 percent of the speech-language impaired were over 65, they represented only 10 percent of the case load for speech pathologists, and while 43 percent of the hearing-impaired population was over 65, it represented only 24 percent of the case load for audiologists.⁵ At least part of the disparity between need and demand for audiologists appears related to Medicare regulations limiting reimbursement to specific services. As a result, ASHA is developing legislation seeking expanded reimbursement. In the meantime, Medicare coverage has become even less adequate as interventions that were not even conceived of when Medicare was written have become available. Examples include new augmentative equipment, devices, and techniques that help treat the hearing and communications problems caused by neurological deficits or dementia.

The final issue is whether services mandated for school-aged children are being provided. Federal law (P.L. 94-142) guarantees that handicapped children up to age 21 are to receive whatever speech and hearing therapy is needed to enable them to learn. A Department of Education report to Congress, however, reported that a shortage of qualified individuals continues to impede the delivery of services and that speech and language therapists are among those needed most.⁶ Anecdotal evidence suggests that many jurisdictions lack the resources to fund services.

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Respiratory Therapy Personnel

The Bureau of Labor Statistics (BLS) estimated that respiratory therapists held about 60,000 jobs in 1990, a number projected to grow 52 percent by 2005.¹ Also in 1990 the American Hospital Association estimated that there were 63,285 full-time equivalent respiratory therapy personnel employed in hospitals: 39,907 therapists and 23,378 respiratory therapy technicians.

Driving the rapid projected growth for this occupation is the expansion of the middle-aged and elderly population, which is more likely to suffer from such diseases as pneumonia, chronic bronchitis, emphysema, and heart disease. The growing number of AIDS patients, who often suffer from lung disease, and the reemergence of TB also will contribute to demand. Advances in technology are expected to increase demand as well by making additional services available.

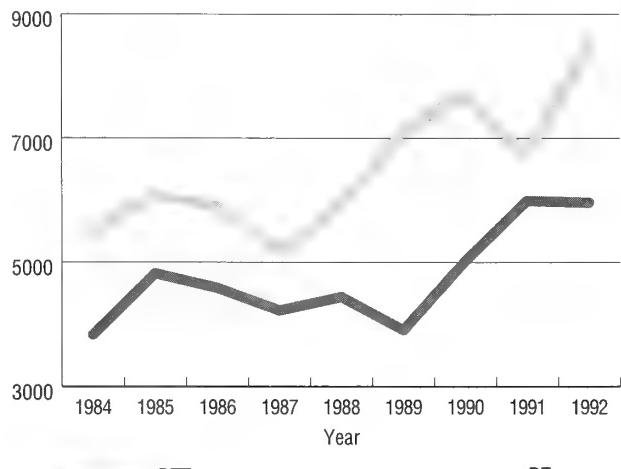
The method of updating its educational requirements is a unique characteristic of this occupation. Using a needs-based approach, respiratory therapists have effectively eliminated the criticism other professions face when educational requirements are updated without any systematic means of determining the needs of employers. The respiratory therapists' system works by surveying both workers and employers to identify current needs and skills. The findings are then shared with educational programs for purposes of updating their curriculum, and are eventually incorporated into the registry exam. The system thus avoids unwarranted educational requirements while retaining the flexibility to adapt to changing needs and advances.²

Issues

The adequacy of supply of respiratory therapy personnel became a concern during the early to mid-1980's when the number of graduates from both therapists and technician programs declined.

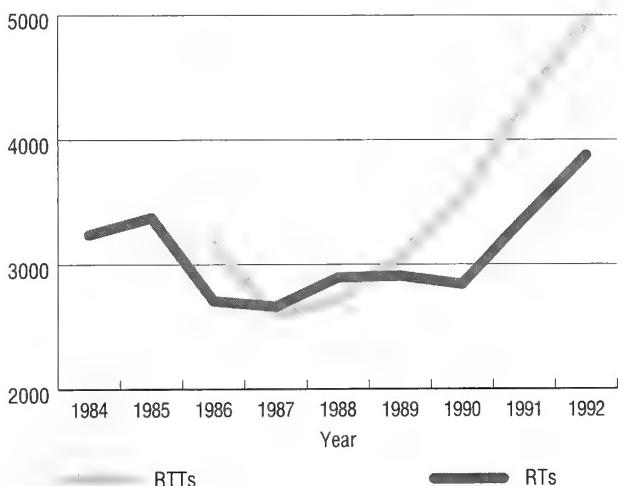
Since 1988, however, the number of graduates and enrollments have increased. In 1992, there were a record 8,817 graduates, 68 percent above the all time low recorded

Figure 18
Enrollments in RT and RTT Programs



Source: AMA's Committee on Allied Health Education and Accreditation

Figure 19
Graduates of RT and RTT Programs



Source: AMA's Committee on Allied Health Education and Accreditation

in 1987. Not surprisingly, the increase has coincided with a decline in the American Hospital Association's calculated hospital vacancy rates: from 8.9 percent in 1989 to 7.4 percent 1991.³ This drop is particularly revealing in that 90 percent of respiratory therapy personnel are employed in hospitals.⁴ Data from the American Association of Respiratory Care showed similar trends, with full-time-equivalent vacancy rates declining from 5.3 percent in 1987 to 4.8 percent in 1992.⁵

One of the primary issues for this occupation is lack of specific Medicare reimbursement for respiratory therapy services. In hospitals, reimbursement must come from a general "room and board" Medicare rate, for which there is competition from other ancillary services. Elsewhere, reimbursement is limited to services provided at skilled nursing facilities (SNFs), and then only for services provided by a therapist who is employed by a hospital with official ties to the SNF. Similarly, reimbursement for services in a home health care environment are available only to the extent that they can be collected under charges for equipment. The AARC claims such limited reimbursement inhibits access and affects care. They therefore advocate for specific Medicare reimbursement for services provided in hospitals, nursing homes, and home health care. While expanding coverage could improve access, however, it also would increase costs. The subject of expanded reimbursement warrants further analysis.

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In 1993 the American Dietetic Association (ADA) estimated that about 80 percent or 43,600 out of an estimated 54,478 registered dietitians were employed in dietetics.¹ The Bureau of Labor Statistics (BLS) estimates show that dietitians and nutritionists held about 45,000 jobs in 1990.² The ADA's 1993 estimate is slightly lower than BLS's 1990 estimate partly because the ADA's count is of those holding the Registered Dietitian (RD) credential awarded by its Commission on Dietetic Registration. The BLS, on the other hand, is indifferent to credentials and accepts the count of any employer reporting a "dietitian or nutritionist" on staff.

The BLS projects that jobs for dietitians and nutritionists will grow about 24 percent between 1990 and 2005, about average for the total workforce.² Factors creating the demand include general population growth, heightened interest in nutrition, and the willingness of individuals to pay out-of-pocket for services. While hospitals employed the largest share of wage and salary dietitians, about 39 percent in 1990, their share is expected to decline to about 34 percent in 2005 as employment increases in nursing homes and other residential care facilities such as halfway houses. As a group, State and local governments should remain the third largest employer of dietitians. Analysis of factors commonly used to identify shortages suggests that the supply of dietitians is adequate to meet current demand.

As with many other occupations, the future role dietitians play in the changing health care system will largely be determined by the extent to which they are reimbursed. Currently, consumers pay directly for many dietetic services. Medicare payment for hospital services is through a general room-and-board rate for which dietetic and ancillary services must compete. The ADA argues that lack of reimbursement limits access and quality of care and contributes to increased costs because good nutrition prevents disease and speeds recovery.

While there is substantial data documenting the costs of diet-related illnesses, there is little if any data demonstrating the efficacy of expanded services. More research is needed to validate claims that professional dietetic services are cost-effective and that investing in those services save money by preventing illness and hastening recovery.

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Diagnostic Imaging and Ionizing Therapy Personnel

Radiologic technologists and technicians, nuclear medicine technologists, sonographers, magnetic resonance technologists, and radiation therapists compose a group of occupations collectively involved in either diagnostic imaging or ionizing therapy. According to the Bureau of Labor Statistics' (BLS), there were about 10,400 nuclear medicine technologists and about 149,000 individuals employed as radiologic technicians and technologists, radiation therapists, sonographers, or magnetic resonance technologists in 1990.¹ Other than membership data from professional associations, which typically do not represent an entire profession, there are no other supply estimates. As a result, it is impossible to determine the absolute or relative growth of any occupation other than nuclear medicine technologists.

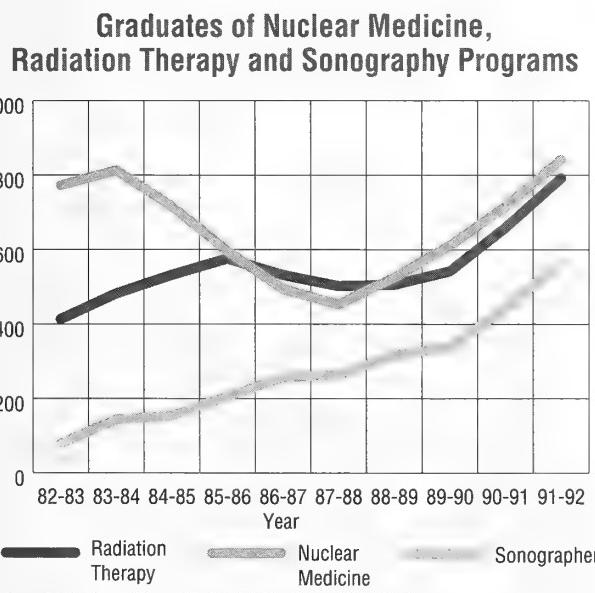
Issues

The lack of reliable, occupational specific supply data inhibits a thorough analysis of claims, such as those made in 1989 by the American Healthcare Radiology Administrators and others, that a shortage of these personnel exist.² American Hospital Association (AHA)

data show that between 1989 and 1991 the vacancy rates for sonographers and radiologic technologists declined by about 1 percentage point each to about 7 percent, the level used by the AHA to characterize a shortage.³ Over the same time, the AHA vacancy rate for radiation therapy technologists grew from 10.3 percent to 12.9 percent while the rate for nuclear medicine technologists remained unchanged at about 8.9 percent.

The hospital vacancy rate for nuclear medicine technologists could be considered a good proxy for the occupation's overall vacancy rate since about 92 percent of the occupation is employed in hospitals.⁴ Nuclear medicine is a relatively small occupation, however, making it relatively easy to incur large vacancy rates with only a few vacancies. Because only about 58 percent of the remaining occupations are employed in hospitals, and because there are no occupational-specific estimates of their proportion in hospitals, the use of AHA vacancy rate data as an overall proxy for vacancies is not advisable.

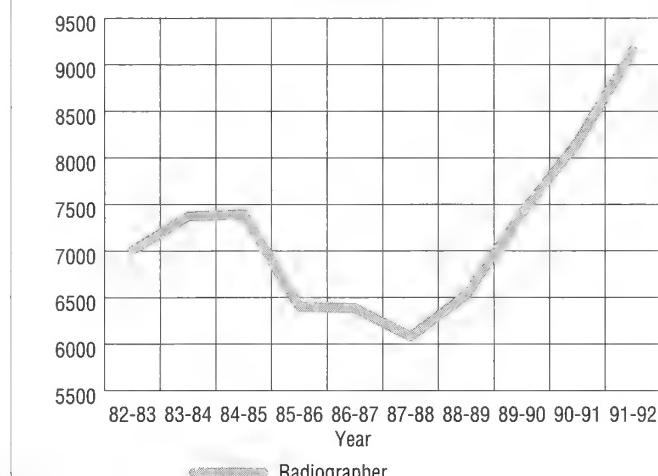
Figure 20a



Source: AMA's Committee on Allied Health Education and Accreditation

Figure 20b

Graduates of Radiographer Programs



Source: AMA's Committee on Allied Health Education and Accreditation

Higher-than-average salary increases often follow any unresolved personnel shortages. Data shows that earnings for the general category of radiologic technicians and technologists increased 48 percent between 1983 and 1991; a rate faster than the 37 percent increase for all occupations, but slower than the 61 percent increase for the therapy occupations generally acknowledged to be in short supply.⁵

While the limited data available suggest a shortage of some, if not all, of the occupations in this group, it is encouraging to note that graduates of accredited educational programs in radiography, radiation therapy, and nuclear medicine have shown rapid growth after experiencing declines during the mid-1980's. Only the relatively young sonography occupation showed steady growth through the 1980's.

The licensing of radiologic personnel continues to be an issue. The American Society of Radiologic Technologists (ASRT) maintains that licensure laws would guarantee an appropriately trained workforce that would reduce cost and unnecessary exposure to radiation by decreasing the need to repeat procedures. Congress in 1981 passed the Consumer-Patient Radiation Health and Safety Act which provided for the development of standards for accrediting educational programs and for certifying individuals. The Act, however, preserved the States' right to approve educational programs and regulate personnel. Since its passage, the States have adopted a slow, evolutionary approach to adopting licensure. As of June 1992, 29 States licensed radiographers, 22 States licensed radiation therapy technologists, and 15 States licensed nuclear medicine technologists.

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Medical Records Personnel

Medical records technicians (MRTs) held 52,000 jobs in 1990, a number projected to grow 54 percent to 80,000 jobs by 2005.¹ Driving this growth is the increasing number of tests, procedures, and services that need to be recorded for use by third-party payers, providers, and patients to answer questions about reimbursement, quality assurance, and risk management.

Issues

The current availability of jobs and rapid projected growth might suggest that a shortage of medical records personnel exists.² The limited data that currently exists, however, fails to support such a claim. American Hospital Association (AHA) vacancy rates for the two occupations responsible for maintaining hospital records—medical record coders and medical transcriptionists—were 6.5 percent and 5.7, respectively, in 1992, below the 7 percent rate used by the AHA to characterize a shortage.³ The usefulness of AHA data, however, is limited because hospitals only employ about 58 percent of this occupation.⁴ Nonetheless, the limited earnings data available shows that wages have experienced only average or slightly higher-than-average growth over the last three years, a fact that is not indicative of an occupation in short supply.^{5/2} Also, employment grew 24 percent between 1983 and 1992, only slightly faster than the 17 percent growth in total employment.⁵

The likelihood of a future shortage is difficult to analyze because of problems in projecting supply. Currently two levels of certification for this occupation are available; a two-year Accredited Record Technician (ART) credential, and a 4-year Registered Record Technician (RRT). While employers reportedly prefer hiring formally educated and credentialed individuals, there are no laws requiring them to do so. As a result, fully half of all positions are filled by individuals having less education than the amount needed to acquire the two-year associate degree.⁵ Graduate data is therefore not useful in estimating supply. Nonetheless, it is interesting to note that between 1986 and 1992 enrollments in the two-year programs increased 79 percent while the number of graduates

increased 30 percent.⁶ Growth was not as great in the four-year programs where enrollments increased 24 percent and the number of graduates actually declined by 18 percent.⁶

As the result of an Institute of Medicine study calling for the development of computer-based record keeping, the American Health Information Management Association (AHIMA), hospitals, physicians, insurers, and other organizations have joined to establish the Computer-Based Patient Record Institute (CPRI).⁷ The institute is attempting to develop a universally accepted, longitudinal, standardized, computer-based record keeping system capable of meeting all clinical, financial, and research needs. Such a system would theoretically reduce costs by allowing patient records to be electronically entered, filed, and transmitted to insurers and other involved parties, thereby eliminating the need for many of the clerical workers currently involved in the copying and filing of paper documents. The effect of such a system on the occupation is unknown. In theory, health care providers would learn to directly input data themselves.

Developing such a system is an enormous task that will take time. Goals that need accomplishing, include the development of a standardized coding for drugs, diseases, and personal identification; and the development of policies and mechanisms that will insure patient confidentiality, and a legal framework that will facilitate the proper use of computer-based patient records.

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Clinical Laboratory Personnel

Clinical laboratory personnel are composed of a number of occupations, including medical technologists, medical laboratory technicians, cytotechnologists, and histologists. Each of these has educational requirements that range from on-the-job training to a baccalaureate.

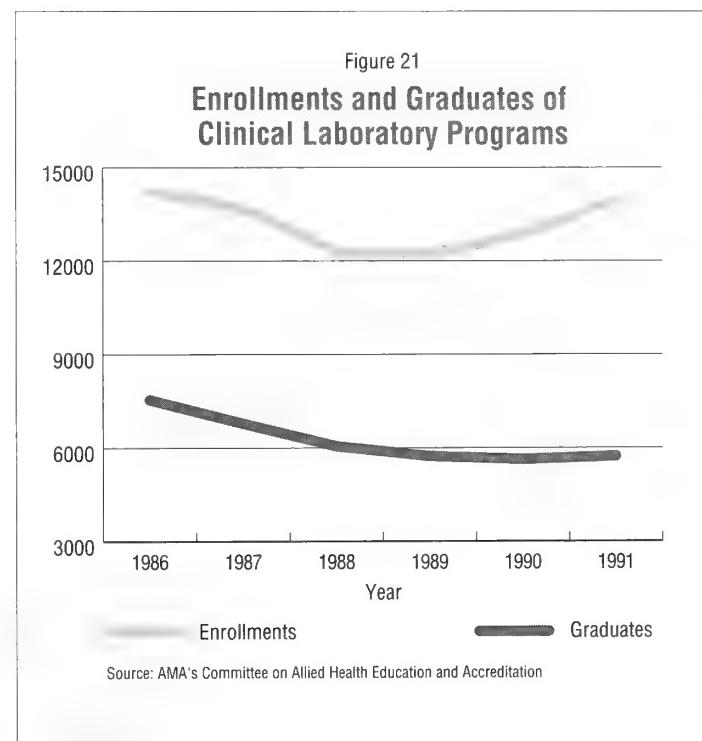
The Bureau of Labor Statistics' Current Population Survey (CPS) found 301,000 persons employed as clinical laboratory technicians and technologists in 1992, an 18 percent increase since 1983, about the same as the 17 percent growth in total employment.¹ Unfortunately, occupational specific employment data for the occupational components of the clinical laboratory field are only available from the professional associations whose membership is limited.

Issues

While those employed in the clinical lab field overwhelmingly believe that a personnel shortage exists, the claim for one is based largely on widely varying vacancy rate data and anecdotal evidence. In 1991, for instance, the American Hospital Association (AHA) identified only one clinical lab occupation as having a vacancy rate over the 7 percent it uses to characterize a shortage (cytotechnologists, 12.8 percent).² In contrast, hospital vacancy rate data collected by the American Society of Clinical Pathologists (ASCP) for 1992 depicted double digit vacancy rates for all but one occupation.³ It should be noted, however, that the ASCP's sample size and response rate were less than that of the AHA's, and that a survey's timing can also affect the results. A survey conducted shortly before the end of a school year can yield a different outcome than one conducted a month after. Also considered an indicator of shortages is the length of time needed to recruit personnel. AHA data identifies cytotechnologists as one of the hardest occupations to recruit with about 42 percent of hospitals reporting that they need more than 90 days to fill a position.² An analysis of AHA data also indicates that the remaining three occupations are generally easier to recruit—taking less time than the average for all occupations.

Also conflicting with the profession's feeling that a shortage exists, is BLS historical data depicting employment and salaries for all clinical lab workers as growing at a rate about equal to that of all occupations as a whole.^{1/4/5} Average, rather than rapid growth in these areas would seem to argue against the existence of a shortage, even though a shortage does appear to exist in cytotechnology. Although educational programs, enrollments, and graduates from accredited programs started to decline in the mid-1980s, it is encouraging to report that enrollments and graduates are again on the increase.

In addition to the shortage issue are Congressional concerns over the quality of testing and the access of rural and underserved populations to qualified medical



laboratory services. As a result, the Bureau of Health Professions was instructed to conduct a study of clinical laboratory personnel to identify factors affecting supply in rural and underserved areas and to identify alternative routes for the certification of clinical laboratory personnel. Results are pending.

Another issue or concern is over the effects that the Clinical Laboratory Improvement Amendments (CLIA) of 1988 will have on clinical laboratory personnel. Based on such factors as complexity, danger to the patient, and risk of error, the Amendments now divide clinical laboratory tests into three categories—complex, moderate, and waived. The Act also specifies educational standards for managers and personnel performing tests at each of these three levels. It is the latter that has created considerable debate over the effect CLIA will have on rural labs: facilities that often employ experienced individuals who are adequately prepared but lack formal education. Because of these concerns, the Center for Disease Control's National Advisory Committee is proposing that existing laboratory personnel be grandfathered in.

Technological improvements promise to bring rapid change to the field of clinical laboratory science. While some tests will become less complex and less labor-intensive, newer and more complex tests requiring greater levels of education will also be developed. In many respects, clinical laboratory science is analogous to the computer field where technological change has grown by leaps and bounds. As a result, it is difficult to estimate technology's effect on overall demand for labor, although educational requirements are likely to increase.

The appropriate level of education needed to work in a clinical laboratory continues to be an issue. The proceedings from a special panel on clinical laboratory workers found that "...it is difficult to definitively agree upon what level of training is required for different jobs—both currently and in the future."⁶ This uncertainty over the appropriate level of training is compounded by disagreement over the roles some workers play, the fact that only a few States license clinical laboratory personnel,

and that while certification is offered by a number of organizations, it is not required. While the general consensus is that not every worker requires a baccalaureate or extensive training, there appears to be agreement that medical technologists, cytotechnologists, and others who will perform complex tests should be required to pass minimal educational and competency requirements. For occupations such as medical lab technicians, who perform more simple tests, such requirements appear to be unnecessary. Still in question are what requirements are needed of those performing moderately complex tests. CLIA regulations currently permit high school graduates trained on the job to perform moderately complex testing, which is estimated to be about 75 percent of all lab testing.⁶

Finally, AIDS and the reemergence of TB promise to increase the demand for laboratory tests. The degree to which demand will increase, however, is unknown.

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Public Health

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The Institute of Medicine (IOM) in *The Future of Public Health* defined public health's mission as assuring the conditions for people to be healthy.¹ Although often thought of as a provider of last resort, public health's primary focus is not the provision of individual care, but community disease prevention and health promotion.

While a comprehensive and diverse number of services and entities are involved in insuring the public's health, the IOM recommends that government agencies take primary responsibility for three core functions. These core functions and their components include:

- **Assessment**—the collection of data, monitoring of disease incidence, and the monitoring of health outcomes.
- **Policy Development**—the development of sound health policy and planning through the use of public health's scientific skills and knowledge.
- **Assurance**—the prevention of epidemics; protection of the environment, workplaces, housing, food, and water; responding to disaster related health problems; assuring the availability of quality medical care; providing medical care when needed; and securing a skilled public health workforce.

Performing these functions requires the work of a variety of public health professionals, including physicians (many of whom are board-certified in preventive medicine), nurses, dentists, epidemiologists, environmental health personnel, industrial hygienists, health service administrators, nutritionists, social workers, and educators. There are currently no national examinations or licensure requirements for public health practice; furthermore, there is no strictly defined scope of practice other than the goal of protecting and improving the population's health and well-being. As a result, educational requirements for practice in this diverse field are varied. A generally recognized set of core public health disciplines, however, includes biostatistics, environmental sciences, epidemiology, health behavior, and health care policy, administration, and organization.²

The supply of public health professionals is impossible to estimate accurately, due in part to some disagreement over which occupations compose public health and their lack of specific educational, competency, or licensure requirements. Estimating supply, therefore, is limited to the opinions of experts in the field. Most experts would agree that there is a shortage of adequately trained individuals, especially in such expanding fields as environmental health.

Issues

Effects of the changing health care delivery system are the principle challenges confronting public health. Expansion of insurance coverage and greater reliance on managed care both could fundamentally alter the public health infrastructure. Health maintenance organizations, for instance, might hire their own epidemiologists to assess disease prevalence and devise prevention strategies for their members.

An increased focus on health maintenance and disease prevention in the private and public sectors might result in more community-wide primary health care programs. Currently, public health programs tend to emphasize specific populations, such as minority and economically disadvantaged groups and specific health conditions such as diabetes.² Critics complain that the needs of individuals who fall outside these narrowly defined groups are not being met.

The evolving health care financing and delivery systems also create concerns. Because of its history as a service provider, those in public health are concerned that interest in public health agencies may decline if health insurance coverage increases, and health maintenance organizations become more accountable for the health of their members. At risk are these agencies' other important functions of assessment and policy development, which might be neglected.

Nonetheless, experience has shown that financing alone does not guarantee access to appropriate health care services. Cultural and physical barriers, such as historical reliance on alternative forms of medicine and difficulty in finding transportation, are also major problems for those needing access to health care services. As part of its assurance function, therefore, public health must be able to develop and administer community-based outreach programs to insure true access to all.

Aside from the opportunities and concerns associated with the changing health care financing and delivery systems, other issues requiring attention include the rapid expansion of areas such as environmental and occupational health, and accident and injury prevention. Previous versions of this report to Congress have highlighted the concerns that public health must find ways to address pollution, hazardous waste disposal, toxic exposures in the workplace, substance abuse and the Country's epidemic of violence.³ The public health field must continue to recognize these areas as part of public health and move to address these problems.

The final issue pertains to assuring an appropriately trained supply of public health professionals. Currently, the Master of Public Health (MPH) and Master of Science in Public Health (MSPH) degrees are regarded as public health's basic professional degrees. Twenty-six accredited schools of public health, 7 accredited health education programs, and 11 community medicine programs award them as well as an additional 69 nonaccredited programs.^{1/2/4} More than 300 nonaccredited programs offer related degrees in areas such as health administration and education, and environmental health.^{1/2} Accredited programs appear to provide the widest educational base in public health by requiring completion of courses in five specific areas.

The Pew Commission has recommended that public health's mission of health promotion and disease prevention be more strongly linked to educational requirements. It also recommends development of model collaborations between schools of public health and local and State health departments in an effort to match academic training with real world needs. Further, it suggests public health schools work together to develop new, innovative approaches, including continuing education courses. Finally, the Pew Commission recommends that public health programs assist other clinically-oriented health professions to better understand the needs of the public and community through collaborative educational programs.

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Pharmacists

Stephen Tise, Office of Health Professions Analysis and Research, BHPR.

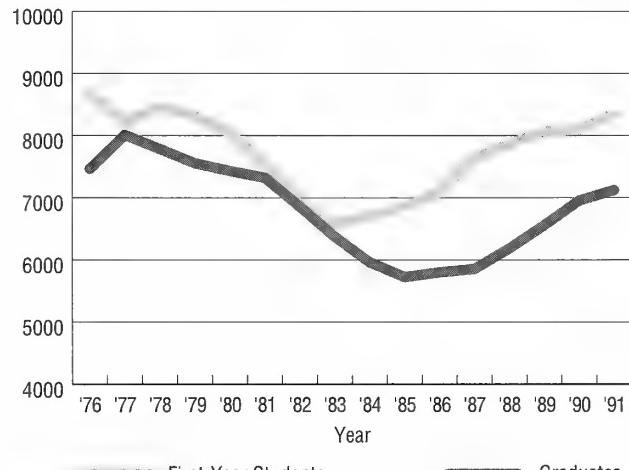
The Bureau of Labor Statistics (BLS) estimated that there were about 171,000 pharmacists in 1990.¹ This is comparable to a recent census of pharmacists which estimated that there were about 172,000 pharmacists actively employed in 1992.² According to data from the BLS, employment of pharmacists grew 8 percent between 1983 and 1990.¹

Issues

As with many other health care occupations, there has been concern about the adequacy of the nation's supply of pharmacists to meet current and future demand. Despite years of having a practitioner-to-population ratio of about 64 pharmacists for every 100,000 people, evidence commonly associated with shortages suggests that the demand for pharmacists in the recent past may have exceeded supply. The evidence includes higher-than-average growth in earnings, hospital vacancy rates which the AHA characterizes as representing a shortage, and reports from educators, who monitor the employment activities of recent graduates, that demand for their graduates is exceeding supply.

Factors possibly contributing to the need for more pharmacists include the growing population; increased use of prescription drugs, especially among the growing aged population; and, pharmacy's expanding role under recent Medicaid regulations requiring review of patient drug use and patient counseling. Fortunately, as the following graph shows, enrollments and graduates have been increasing since the mid-1980s after several years of decline. In addition, the American Hospital Association's (AHA) most recent human resources survey shows a decline in the vacancy rate for pharmacists to just below the 7 percent rate it considers a shortage.³ Also helping to improve the balance between supply and demand is the growing number of pharmacy programs, an abundance of applicants, and a trend toward using more pharmacy technicians and robotics to help count and dispense drugs. As with many occupations, personnel shortages are likely to be local or regional rather than national in nature.

Figure 22
First-Year Enrollments and Graduates
of Schools of Pharmacy



Source: American Association of Colleges of Pharmacy

An educational issue confronting the profession is the American Council of Pharmaceutical Education's intent to create a single, degree for all pharmacists. Currently, students can obtain a bachelor's degree in pharmacy in five years and a doctorate in six. The Council would eliminate the five-year option. Proponents argue that additional education is needed to prepare pharmacists for their expanding role in patient counseling, drug monitoring, and clinical services. Opponents question the need for doctoral level pharmacists in many employment settings and fear the extra year of schooling will not only increase educational but overall health care costs. At the time of this report, the proposal was going through a comment and hearing phase. The official adoption of the doctorate degree for all pharmacists is not expected to occur before 2000, making estimates of costs and effect on supply difficult to calculate.

No matter whether they graduated from five- or six-year programs, the role of pharmacists is becoming more consumer-oriented. The 1990 Omnibus Budget Reconciliation Act (OBRA) requires State Medicaid programs to implement drug use review programs and requires pharmacists to offer counseling to all Medicaid patients. The review program is intended to improve the quality of pharmaceutical care by ensuring prescriptions are appropriate, necessary, and unlikely to have adverse medical effects. The legislation left the decision of how to define "counseling" to each State; it may include instruction on proper dosage, duration of treatment, storage, what to do if a dose is missed, and how to identify common side effects.

The cost and method of payment for these extra services is a concern to pharmacists, private insurance companies considering the same requirements, and members of the public. The Health Care Financing Administration (HCFA) has estimated that the time needed to review a patient's records, make an offer to counsel, and then provide counseling will take two to four minutes at a cost of \$1 to \$2 a prescription.⁴ Several demonstration projects are under way to study issues of review, counseling, and compensation. One proposal to increase dispensing fees does not cover instances when a pharmacist provides counseling but not dispense a drug.

The cost-conscious also have raised concerns that the cost of reviewing and counseling may exceed any realized savings. Several recent studies, however, show that review and counseling are cost-effective.

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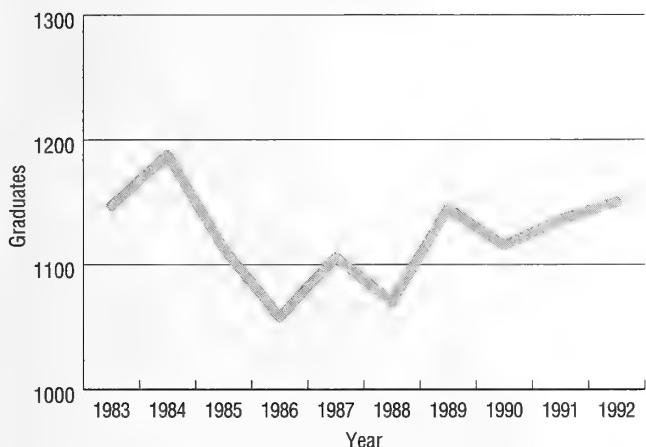
Optometrists

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According to the American Optometric Association (AOA), about 27,600 full-time-equivalent optometrists were practicing in 1993.¹ The Bureau of Labor Statistics' (BLS) 1990 estimate of optometrists jobs was 37,000.² The difference may be partly explained by the Bureau's counting of both full- and part-time jobs and that many optometrists work in more than one location or job and would therefore be counted twice.

The AOA estimates the active supply of optometrists will increase by about 1.9 percent annually from 25,900 in 1990 to 31,000 in 2000.¹ This is faster than the 1.2 percent annual growth in new jobs that the BLS projects for the period 1990 to 2005. The BLS projection represents a 20 percent job growth from 37,000 in 1990, to about 45,000 in 2005.²

Figure 23
**Graduates of Optometry Programs
1983-1992**



Source: Association of Schools and Colleges of Optometry

Issues

Currently, supply and demand for optometrists appears to be in balance, although it requires monitoring. The AOA's successful and ongoing legislative activism continues to expand optometry's market through expansion of State practice acts. Since the early 1970's, when the practice of optometrists was limited to performing simple eye examinations for purposes of prescribing corrective lenses, all states have come to permit the field to use diagnostic drugs while 32 States permit optometrists to prescribe therapeutic drugs for a number of specific eye diseases. The Association plans to continue its legislative efforts to have the remaining 18 States grant similar therapeutic dispensing privileges. A 1987 change to Medicare regulations has also expanded the market potential for optometrists. Now defined as "physicians", optometrists are reimbursable for all Medicare-covered services that State law allows them to provide. As a result, optometrists are beginning to reclaim a share of the eye care services they lost to ophthalmologists following Medicare's introduction.¹

A number of studies have shown that for routine eye care, the cost of optometry services is less than for ophthalmology services.³ One of the most recent studies shows that optometrists charged an average of \$19 less for a basket of predetermined services.⁴ Thus, it is possible that changes both in Medicare and State scope-of-practice laws will reduce costs and improve access by transferring demand from more expensive ophthalmologists to less expensive and more plentiful optometrists.

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Podiatrists

Stephen Tise, Office of Health Professions Analysis and Research, BHP.

The Bureau of Labor Statistics (BLS) estimated that podiatrists held about 15,000 jobs in 1990 and projected the number to grow to 23,000 by 2005.¹ This would represent a 46 percent increase, a rate that is much faster than the 20 percent rate projected for all occupations. The BLS estimate of 15,000 appears somewhat high, however, in that between 1960 and 1991 only 12,366 individuals had graduated from schools of podiatry. Part of the variation may be attributable to BLS's system of counting both full and part-time jobs, so that dual job holders would be counted twice. The American Podiatric Medical Association (APMA) estimated that there were about 13,000 practicing podiatrists in 1993, probably a more accurate estimate of supply.²

The seven U.S. schools of podiatric medicine are located in Florida, California, New York, Ohio, Pennsylvania, Illinois, and Iowa. Enrollment in these schools has increased substantially in the last 3 years from 595 in 1988-89 school year to 802 in 1992-93. Currently no new programs are planned. The APMA reports that graduates' demand for residency positions exceeds the available supply, although the gap is narrowing. The profession has recently moved to adopt a proposal that would require one year of post-graduate training for all podiatry school graduates.

Issues

With respect to foot care, podiatrists are considered physicians and receive the same reimbursement as do their allopathic and osteopathic counterparts. Podiatrists are aware, however, that the changing health care system may change the way they practice. With roughly 70 percent of podiatrists in private practice, any movement toward managed care systems would tend to force podiatrists to form new alliances with manage care organizations.

On the supply side, there are relatively few podiatrists and they are poorly distributed. Nearly 50 percent are employed in the seven States having podiatry programs.^{2/3} Meanwhile, the demand for foot care continues to grow, driven largely by the aging of the population. Currently, the elderly compose about two-thirds of the average podiatrist's caseload. Despite the growth in demand, and the maldistribution of podiatrists, however, the supply of podiatrists appears adequate. Certainly the ability of primary care physicians and orthopedists to substitute for podiatrists helps to absorb excess demand for foot care. With a 1990 median net income of \$73,746, however, podiatrists are probably less costly than orthopedists or primary care physicians.⁴ It therefore seems reasonable that a geographic redistribution of podiatrists could help reduce costs. The profession agrees that a redistribution is desirable, but questions remain about how to achieve this.

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Chiropractors

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As of 1990 there were an estimated 45,000 to 50,000 licensed chiropractors. An analysis of factors commonly used to identify shortages indicates that the supply of chiropractors is adequate to meet the demand. A 1991 survey by the American Chiropractic Association corroborates this with its finding that 87 percent of its chiropractic respondents felt there was either an adequate or oversupply of chiropractors in their area.¹

Although all 50 States and the District of Columbia license chiropractors and the Federal government defines doctors of chiropractic as "physicians" under the Medicare, Medicaid and Federal Employees Compensation Acts, chiropractic continues to bear a certain stigma that a number of the chiropractic associations attribute to years of discrimination and restraint of trade at the hands of organized medicine.^{2/3}

Creating some confusion about chiropractic is its history of having two branches. The more conservative "straight" chiropractors confine their care to locating and correcting problems of the spine. Their guidelines suggest that they alert their patients to any medical findings that fall outside their narrow scope of practice and allow the patient to consult with another provider, if they choose, while continuing chiropractic care.⁴ Direct referrals are avoided because straight chiropractic guidelines state, "Professional referral requires authority and competence to acquire accurate information concerning matters within the scope and practice of the profession for which a referral is made."⁴ Straight chiropractic is also notable for its use of a terms-of-acceptance document. This document defines for the patient the objectives, responsibilities, and limitations of chiropractic care, and the terms under which care will be provided. "The patient's acknowledgement of the terms allows the provider the ability to accept the patient for care and allows the patient the ability to make an informed choice to accept the care."⁴

Straight chiropractic is currently taught in 3 of the 17

chiropractic schools in the United States. These programs are accredited by the Straight Chiropractic Academic Standards Association (SCASA) which, until recently, was recognized as an accrediting body by the U.S. Department of Education. Application to the Department for renewed recognition, however, was denied. As of late 1992, nine States and the District of Columbia accepted graduates of SCASA programs to sit for licensure. According to a survey by the Federation of Chiropractic Licensing Boards, at least four jurisdictions will drop eligibility of SCASA graduates to sit for licensure while another four will reevaluate their positions in light of the Department of Education's decision.

Historically, the second chiropractic branch was populated largely, but not entirely, by "mixers", who combined traditional spinal manipulation with expanded duties and adjunct therapies. As this branch grew, it included training that allowed the diagnosis, prognosis, and treatment of problems amenable to chiropractic care while recognizing the need to be able to refer patients to other health professionals.

This branch of chiropractic is currently taught in 14 of the 17 schools in the United States and are accredited by the Council On Chiropractic Education (CCE). An additional program has been established in Connecticut and is seeking certification with CCE while North Carolina is studying the feasibility of developing a program. The CCE is recognized by the U.S. Department of Education. Graduates of CCE programs are eligible to sit for licensure in all 50 States and the District of Columbia.

Issues

Although considered by Medicare to be physicians, Medicare reimbursement for chiropractic services is limited solely to the manipulation of the spine. Services such as X-rays or other clinical services are not reimbursable and must either be paid for with secondary insurance or out of pocket. Members of the chiropractic profession feels this represents a barrier to individuals who would prefer to see a chiropractor, but opt to see a physician because their services are more likely to be covered.

Another issue is related to the possible effects of the evolving health care system on chiropractors. The vast majority of chiropractors are self-employed and managed care providers such as HMOs and PPOs have not been anxious to hire them. Should a more managed care approach evolve, chiropractors run the risk of being excluded from a growing share of the health care market.

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Clinical Psychologists

Stephen Tise, Office of Health Professions Analysis and Research, BHPr.

Psychologists employed in the provision of mental health care generally require a doctorate and may be trained as clinical psychologists, counseling psychologists, or school psychologists. Institutions award either a Doctor of Philosophy (Ph.D.) or a Doctor of Psychology (Psy.D.) degree depending on the training programs' broad goals and institutional practices. Programs awarding the Ph.D. generally train individuals for careers in research, teaching and practice; the Psy.D is usually awarded by schools emphasizing evaluations and the direct delivery of services.

Between 1979-80 and 1989-90 the number of doctoral programs increased 54 percent, from 162 to 250. Meanwhile, the annual number of doctoral degrees awarded increased 41 percent, from 1,673 to 2,358. This trend is expected to continue.

The proportion of female doctoral students — 62 percent of 1989-90 enrollments — continues to grow. Minorities, however, remain underrepresented, despite efforts to recruit them.

Reliable supply estimates for psychologists providing mental health care do not exist. The demand for psychologists is somewhat flexible in that other mental health professionals provide similar services and can substitute for them. Some of the occupations capable of substitution include psychiatrists, psychiatric nurses, clinical social workers, marriage and family therapists, clinical mental health counselors, and psychosocial rehabilitation specialists. The need for mental health services is expected to continue to grow.

Issues

The evolving health care system is possibly the biggest issue now facing psychologists as well as the other mental health occupations. The much talked about managed care approach, which would work to constrain costs by substituting less costly providers, would likely result in a change in the utilization of various mental health providers. The more restrictive managed care system

could also result in more intensive, short-term services that ultimately would require training programs to adjust accordingly.

Currently, there is little data on how cost-effective it would be to extend reimbursement to those specialists not currently eligible. Additional research is therefore needed to identify discipline specific competencies and to anticipate and overcome competition for limited resources.

Another issue is the need for psychologists to be more cognizant of consumer needs. Examples include the need to integrate the physical and mental health needs of special populations, such as the aged. Educators should also be ready to affect educational changes. For instance, recent research on biologically-based mental illnesses could result in the need to de-emphasize psychotherapy in favor of multiple modalities. This in turn raises concerns about prescriptive authority and would signal a need for greater collaboration with physicians.

The need to foster collaboration among disciplines, and between academics and service providers is also crucial. Collaboration between educational programs is needed to train multiple professional mental health students such as psychiatrists, psychologists, psychiatric social workers, psychiatric nurses, psychosocial rehabilitation and mental health counselors, and marriage and family therapists. Schools that develop such cooperative agreements are likely to determine how public mental health care will be delivered in the next century.

Our thanks to the Substance Abuse and Mental Health Services Administration and the National Institute of Mental Health for permitting the Bureau to draw heavily from their publication, *Mental Health, United States, 1992*. We strongly recommend this publication for a more complete understanding of the complex mental health industry and of mental health practitioners.

Clinical Social Workers

Stephen Tise, Office of Health Professions Analysis and Research, BHPr.

Many States license social workers at three levels corresponding to levels of education: bachelors, masters, and doctorate. The provision of mental health services generally requires the services of a clinical social worker who must have completed a master's degree in social work (MSW). Not all MSW's, however, are clinical social workers. Clinical social workers generally provide face-to-face diagnostic, preventive care, and treatment to either individuals or groups. As an adjunct, clinical social workers may also provide case management services, such as coordinating care after a lengthy hospital stay, or directing clients to individuals or agencies capable of helping them with housing, employment, financial management and job training.

Because specific educational attainment data for clinical social workers is not available, MSW data serves as a proxy representing an upward bound on the number of clinical social workers that might graduate each year. Enrollments and graduates in MSW programs dipped during the mid-1980's, and then rose 22 percent above 1979-80 levels to 27,420 students and 10,063 graduates in 1989-90.

As with psychology, women represent an increasing proportion of students in MSW programs: 82 percent in 1989-90, up from about 76 percent in 1979-80. Minorities remain underrepresented.

Reliable supply estimates for clinical social workers do not exist. Also lacking is an accurate estimate of demand because other mental health professionals can and often do substitute for clinical social workers. As a result, demand for clinical social workers in the mental health arena is very flexible. Some of the mental health occupations

capable of substituting for clinical social workers include psychiatrists, clinical psychologists, psychiatric nurses, marriage and family therapists, clinical mental health counselors, and psychosocial rehabilitation specialists. Clearly, however, demand for clinical social workers could increase should the demand for services provided solely by this occupation also increase. As more underserved, poor, or those with functional problems enter the system, there will be a greater need for social workers to provide such services as case management to get them back on their feet.

Issues

Clinical social workers are facing many of the same issues as clinical psychologists. The most important single issue now facing clinical social workers is the evolving health care system. The currently favored managed care approach, which would work to constrain costs by identifying and then substituting less costly providers, would likely alter the use of various mental health providers. How this would affect demand for clinical social workers is unknown. The more restrictive managed care system could also result in more intensive, short term services that would ultimately require training programs to adjust accordingly.

Another issue is the need for these occupations to be more cognizant of consumer needs, such as the need to integrate the physical and mental health requirements of special populations, such as the aging. Educators also should be better prepared to affect educational changes. For instance, recent research on biologically-based mental illnesses could result in the need to de-emphasize psychotherapy in favor of multiple modalities. In turn, any trend toward increased use of drug therapy would also bring up issues of prescriptive authority and the need for greater collaborative arrangements with physicians.

The need to foster collaboration among disciplines, and between academics and service providers is therefore crucial. Collaboration between educational programs is needed to train the entire gamut of such mental health providers as psychiatrists, psychologists, psychiatric social workers, psychiatric nurses, psychosocial rehabilitation and mental health counselors, and marriage and family therapists. Schools that develop such cooperative agreements are likely to be in the vanguard of those determining how mental health care will be delivered in the next century.

Preparation of this section on clinical social workers relied heavily on the Substance Abuse and Mental Health Services Administration's and the National Institute of Mental Health's report, *Mental Health, United States, 1992*. The Bureau strongly recommends this report to those wishing a more complete understanding of the complex health/mental health sector and of health/mental health providers.

Veterinarians

Stephen Tise, Office of Health Professions Analysis and Research, BHPR.

Veterinarians contribute significantly to human well-being by performing food inspection, disease control, pet care, and medical research.

The Bureau of Labor Statistics (BLS) estimates that veterinarians held some 47,000 jobs in 1990 and projects employment will grow to 62,000 by 2005, a 31 percent increase.¹ Factors contributing to the projected growth include the movement of baby boomers into the 34 to 59 age bracket where pet ownership is highest; the willingness of pet owners to pay for the high-tech, high-priced care now becoming available; ongoing efforts to improve the breeding and raising of livestock; and the growing role of veterinarians in disease control and public health activities.² In addition, veterinarians might also begin to play a larger role in the protection of endangered species.

Unlike physicians, most veterinarians are generalists, so there is a limited availability of specialty services.³ About 75 percent of private practices are dedicated to companion animals, while the rest work with livestock and other species.³ Currently, 27 programs educate veterinarians. The following graph provides trend data on first-year enrollments and graduates.

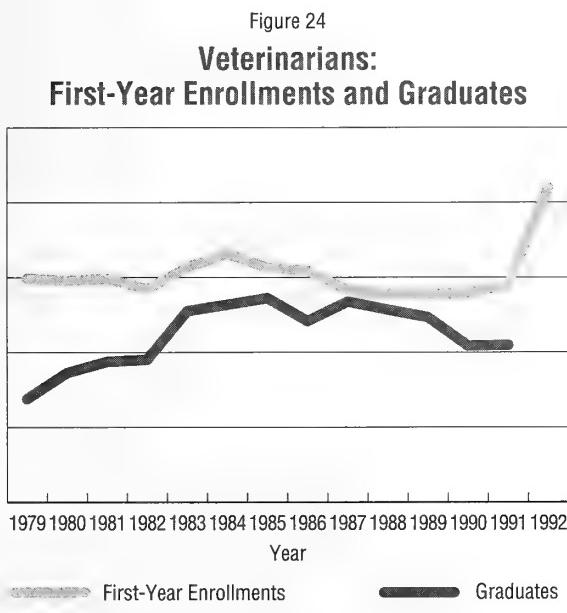
Issues

Because humans place increasing value on animals, veterinarians will play an important role in helping to address the ethical questions that result from the use of animals in medical experiments and product-testing.

Veterinary medicine also needs to be more involved in addressing problems of disease, high concentrations of chemicals and hormones, all problems associated with large, high-technology farming.¹

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